

35. Notes on East African Mammals, collected 1920-1923.

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INTRODUCTION.

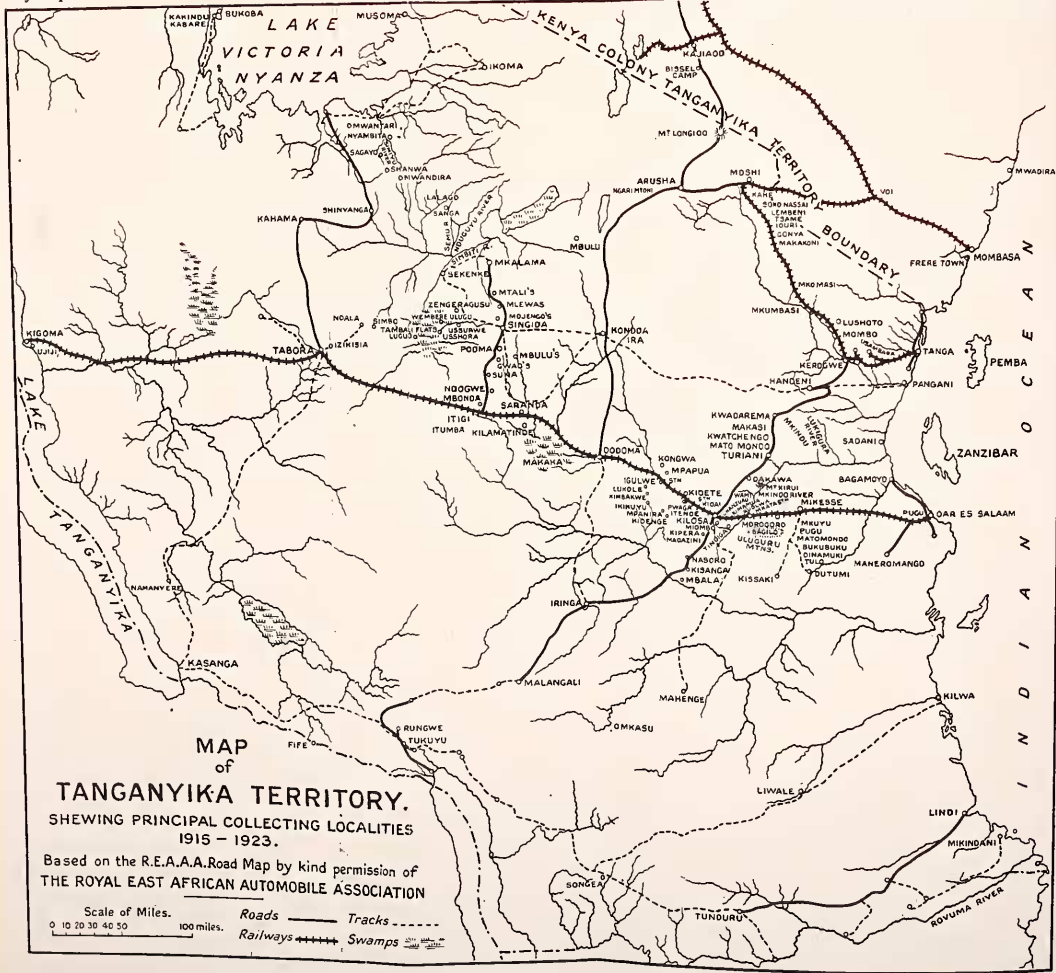
The present paper may be looked upon as supplementary to the 1915-1919 notes*, as localities then recorded are not repeated (except in one or two instances) or similar observations duplicated.

A new feature of the present paper is the inclusion of carefully ascertained native names from only those tribes in whose district the specimens were collected. I consider it of importance that these names should be collected as soon as possible for, with the increasing facilities for travel, many tribes—especially along the Central Railway—are rapidly forgetting their specific names for animals and adopting the blanket-names of the town-bred coast Swahili, who calls every rat, excepting *Cricetomys*, "Panya." The rat-eating Wagogo and Wanyaturu, on the other hand, have specific names for almost every species.

I have avoided using names supplied by other tribes until that particular animal has been collected in their particular district, as when a native is asked for the name of an animal he is not familiar with he will invariably supply you with the name of the nearest creature in appearance to it that he knows, and at times these may not be even related (*e.g.*, lemurs and squirrels, or mole-rats and blesmols). For these reasons a very large percentage of the names collected by travellers and given by Matschie† are quite wrong (*e.g.*, on p. 65, "Uma mwitu" is given for the jackal instead of "Mbweha"). Umba ya mwitu is the hunting dog, and means "dog of the bush." Matschie gives for its Chigogo (not Kigogo) name "Mbua ya porini," which is merely the concoction of a bright native, as Iminzi is the correct Chigogo equivalent. None but a naturalist can hope to obtain

* Loveridge, "Notes on East African Mammalia." In Jour. E. A. & Uganda Nat. Hist. Soc. No. 16, pp. 38-42; No. 17, pp. 39-69.

† Matschie, "Die Säugethiere D. O. A." 1895.



native names of animals with any degree of accuracy, and only then by a lengthy cross-questioning can he be certain there is no confusion.

In this connection I should like to express my thanks to the Rev. John Briggs, who very kindly and thoroughly revised my whole vocabulary of Chigogo names, to Messrs. Thomas and Kershaw, for identifying all the primates, bats, and rodents, and a good many in the other groups (most of the ungulates were not submitted owing to the expense of freighting them); to Dr. Baylis, Mr. Stanley Hirst, and the late Hon. N. C. Rothschild, for kindly determining the parasitic worms, ticks, and fleas; and lastly, but not least, to my chief, C. F. M. Swynnerton, Esq., for the encouragement and interest he has shown in my work, and for permission to publish various notes jotted down whilst on official journeys.

The material mentioned in the following pages consists of 920 skins and skulls, comprised as follows:—

<i>Order.</i>	<i>Families.</i>	<i>Genera.</i>	<i>Species.</i>	<i>No. of Specimens.</i>
Primates	2	4	10	40
Chiroptera	8	14	22	200
Insectivora	3	5	13	43
Rodentia	9	25	47	417
Carnivora	5	15	28	120
Ungulata.....	5	20	24	100
Totals	32	83	144	920

As for two years of the time the writer was stationed at Kilosa, in the office of the Game Department, he had to rely on native collectors to a great extent. The success of the collecting is largely due to the enthusiasm of two brothers, Salimu and Nikola, who collected over 600 skins and exhibited the greatest keenness in looking for novelties. It need not be supposed that the skins are poor on this account; on the contrary, I think they will compare very favourably with any made by Europeans.

It is to be regretted that in the great majority of cases the taking of the measurements had to be left to Nikola, but after checking him on many occasions I have sufficient confidence to believe that they are of some value, though it should be borne in mind that a native does not usually see the necessity for such accuracy as does the mammalogist. Where measurements are given in this paper they are always in this order:—(i.) Length from nose to vent. (ii.) Length of tail without terminal hairs. (iii.) Length of hind foot without claws. (iv.) Length of ear from tip to notch. In the case of bats a fifth measurement is added: (v.) Length of wing, sometimes across outstretched wings as well. All figures are in millimetres.

Four new species and one new race have already been described

from this material by Mr. P. S. Kershaw*, viz., *Nycterus marica*, *Elephantulus venatus*, *Steatomys nuansae*, *Arvicantus tenebrosus*, and *Rattus chrysophilus singida*.

From East to West and South to North the principal localities mentioned in this paper are:—

TANGANYIKA TERRITORY.

Dar es Salaam District.—Dar es Salaam.

Morogoro District.—Bagilo, Mkindo River, Wami River, Mkata River, Rudewa, Honga, Chanzuru, Kimamba, Kondo, Tindiga, Mbala, Kisanga, Madazini, Miombo, Kipera, Kilosa, Kidai.

Dodoma District.—Kibakwe, Ikikuyu, Mpanira-kwa-Sagoi, Kidenge, Itende, Pwaga, Lukole, Igulwe, Dodoma, Itumba, Mbonoa, Ndogwe, Suna, Gwao's, Mbulu's, Pooma, Singida, Mdjengo's.

Kondoa Irangi.—Mlewa's, Mtali's, Mkalama, Zengeragnu, Usshora, Usurwe, Ulugu.

Tabara District.—Tabara, Izikisia, Ndala, Tambali, Lugu, Wembere Flats.

Mwanza District.—Simbiti River, Nduguyu River, Sanga, Lalago, Mwadira, Shanwa, Sagayo, Nyambita, Mwanza.

Bukoba District.—Bukoba, Kakindu, Kabare.

KENYA COLONY.

Frere Town, Nairobi, Eldoret, Kisumu.

The notes on each animal have been arranged on a definite plan. Firstly, the native names, then distribution, habitats, measurements, variations, breeding seasons, diet, habits, parasites and enemies.

PRIMATES.

CERCOPITHECIDÆ.

CERCOCEBUS ALBIGENA JOHNSTONI Lyd.

A single pair of Johnston's Mangabey were obtained from Kakindu, Bukoba. ♂. 543. 720. 150. 30 mm. ♀. 550. 771. 130. 45 mm.

CERCOPITHECUS DOGGETTI Poc.

A single pair of this monkey were collected at Kabare, where they are very common in the great forests according to my collectors. ♂. 640. 845. 50. 40 mm. ♀. 503. 700. 130. 40 mm.

* Kershaw, "On a Collection of Mammals from Tanganyika Territory." *Ann. & Mag. Nat. Hist.* ser. 9, vol. xi. p. 586, May 1923. Kershaw, *Ann. & Mag. Nat. Hist.* ser. 9, vol. xii. October 1923.

CERCOPITHECUS ALBOGULARIS RUFILATUS Poc.

Senghwa in Kikami and Kisagara, Kima in Kiswahili.

The Blue Monkey was met with at Bagilo, all along the Wami and Mkata Rivers, common at Kilosa, Miombo, and Kipera. It shows a marked preference for primary forest and the great trees burdened with epiphytic growth which fringe the banks of the larger rivers.

A young specimen which I had in captivity for some months, and which was subsequently killed by a leopard, was on several occasions observed to eat "cuckoo spit" of its own accord, and with evident relish! The rapidity with which it pounced upon insects—chiefly grasshoppers—and disposed of them was really remarkable. I have watched adults raiding maize plantations at Tindiga, but they are not so addicted to thieving practices as their relatives *C. p. johnstoni*.

A maggot of *Caudylobia* sp. had to be removed from the forearm of the young monkey just mentioned.

CERCOPITHECUS PYGERYTHRUS JOHNSTONI Poc.

Ngederi in Kikami and Kisagara, Numbili in Kinyamwezi, Niadengwa in Chigogo, Tumbili in Kinyaturu, Kinyiramba, and Kiswahili.

Seen or collected at Bogoti, Tindiga, Kilosa, Kipera, Kidai, Itende, Kidenge, Mpanira, Ikikuyu, Kibakwe, Lukole, Igulwe, Ushora, and Ulugu.

The largest male measured 543. 650. 130. 35 mm., and female 470. 535. 121. 40 mm. They probably breed all the year round: notes of females with young at their breasts were made in February (Igulwe) and July (Tindiga). A newly-born young one was found in a shumba at Kilosa, it weighed 14 ozs., and measured 180. 270. 65. 25 mm. (26. vii. 22).

A large female monkey in a dying condition was brought to me by a native, who said it had been attacked by a Martial Hawk-Eagle. As the native carried a bow and arrows I was rather doubtful of the story, but on skinning it later no hole was found but the skull was dented and cracked. It had two old breaks in its tail which were healed. At Kidenge a party of monkeys in the euphorbious thorn-scrub on the side of the mountain raised a great outcry and kept it up for half-an-hour; on enquiring the reason from some natives who were idly watching, I was told that an eagle had dropped down from the sky and was perched on a rock near the monkeys (Kidenge, 14. ii. 23).

The Bogoti specimen had red acarine parasites on its ears.

CERCOPITHECUS PYGERYTHRUS CENTRALIS Neum.

Numbiri in Kisukuma.

Two from Sagayo and Kikindu. The larger male measured 490. 620. 150. 30 mm.

PAPIO CYNOCEPHALUS Linn.

Hoku in Kikami, Nyabu in Kisagura, Nyani in Kiswahili.

Eight examples of the Yellow Baboon were shot in the neighbourhood of Kilosa, where it is all too common.

The largest male measured 858. 637. 237. 55 mm., and female 685. 565. 170. 48 mm.

I believe they breed pretty well all the year round. Females carrying young were met with in July and August, 1921, May and July, 1922. A female was killed on 10.iv.22 with a ♀ fetus weighing 10 ozs. and measuring 171. 136. 52. 22 mm. The young are sometimes carried on the back but generally, and especially when very young, they cling to their mother's breasts, thus being back downwards when she is walking.

A baboon's dietary is too large and varied to record; they break down the mulberry bushes when in fruit with great recklessness, and exhibit this same lack of foresight in their ruthless treatment of paupau trees. In one instance, a tree which was growing against the kitchen wall had its stem gnawed through near the ground so that the tree, which was very heavy with fruit, fell. Their love for paupau fruit emboldens them to come within ten feet of the house.

One of my collectors set a snare for a bushfowl, and on visiting the trap one morning found one leg in the noose and a baboon eating the rest in a nearby tree. I have been told that in Bagamoyo District the natives have the greatest difficulty in keeping fowls owing to the baboons carrying them off, but whether it is the present species that is concerned I cannot say.

If one is armed they are extraordinarily wary and difficult to approach, and if suddenly surprised run away uttering piercing screams, and at other times they treat one with more or less contempt. Other animals seem to derive benefit from association with baboon troops: a female bushbuck was seen with a company in a rubber plantation on many occasions during the spring of 1921, and I saw the same or another running up the road in company with a troop about 3 p.m. in the afternoon of 11.v.22. On 29.vi.22, some ten wild pigs with a party of baboons passed within two hundred yards of the house.

Their vitality is both astonishing and heartrending. Somebody having fired at a baboon near the house one day was sure that he had mortally wounded it, but I came upon the poor beast all alone at 6 a.m. two days later. It was crouched upon a sheet of galvanised iron by a deserted German house in the bush, and was applying its jaw to the iron with the very evident object of assuaging the pain, for its lower jaw was torn away on one side. I shot it through the chest at close range, and yet it ran for sixty feet before it dropped dead. I firmly believe the native story that a wounded baboon will clap its hand over a wound and successfully staunch the flow of blood, whether with the intention of leaving no blood spoor I cannot say. Several times I have

shot baboons in trees, seen them fall, much blood at the foot of the tree, but no trail left.

Two instances of Yellow Baboons carrying off their companions have come to my notice. In one case a local resident, Mr. Kostellesky, shot a large baboon that was picked up by a still bigger beast, which started down the hill with it. Mr. Kostellesky raised an outcry which caused Capt. Turnley and his natives to run out of the house, when they met the baboon with its burden, which it dropped in fear for its own safety. The wounded animal was too hard hit to be able to move.

The second case was witnessed by Mr. D. W. Bisshopp, who shot a female carrying a young one on the Iringa road. He called to his natives to run and capture the little one, but as they approached another female baboon returned—the rest of the troop were in flight—menaced the boys at close quarters, seized the young one and made off with it.

Mr. Kenny Dillon, of Kissaki, wrote me of a recent and quite authentic case which occurred in his district in February, 1923, where baboons attacked and killed the infant child of a native woman while she was at work in the fields.

Their principal and almost only enemy at Kilosa is the leopard, which they will mob when opportunity offers. Some notes on this will be found under the heading of *P. pardus*.

I have only once found a flea (*Ctenocephalus canis*) on a baboon, and this was upon a healthy male in his prime who had also a good many mites on his breasts and in their neighbourhood. Another male had a large number of nematodes (*Physaloptera mordens* Leip.) in its alimentary canal.

PAPIO NEUMANNI Matsch.

Mhuma in Chigogo, Pooma in Kinyaturu, Poma in Kiramba.

Four specimens of this essentially rock-loving baboon were shot at Mtali's, Ulugu, Usshora, and Zengeragusu. They were also seen close to Mkalama. They were always associated with rocky kopjes or outcrops, and at Mtali's a large troop slept on a huge rock at the summit of a kopje.

The largest male measured 830. 500. 200. 55 mm., and female 700. 390. 190. 50 mm. A native brought a young one, which he had had for two-and-a-half months, into camp at Zengeragusu. Though kept on a leash it was very tame, and the air of abandonment with which it lay back in its owner's arms was truly comical.

At Mtali's the local medicine man came to me for the dorsal vertebrae of an old male; these he claimed were a cure for weakness and backache when worn on the lumbar region.

PAPIO TESSELLATUM Elliot.

Kuku in Kisukuma.

Five specimens from Sagayo, where these baboons haunt kopje

country similar to that frequented by Neumann's Baboon, but sleep in the great trees fringing the course of the Simiyu River.

The largest male measured 890. 430. 220. 50 mm., and female 710. 440. 200. 50 mm.

Monkey malaria parasites were found in blood smears taken from a specimen in whose stomach were many nematodes (*Streptopharyngus armatus* Blanc).

LEMURIDÆ.

GALAGO PANGANIENSIS Matsch.

Mwegi in Kikami, Kimwegi in Kisagura, Komba in Kiswahili.

Three specimens from the Rufigi, Ilonga, and Chanzuru were taken alive. It was also heard along the Wami and Mkata Rivers at many points, at Kimamba, Tindiga, and Kilosa.

The Ilonga specimen was only a day or two old when found (24. iii. 23) by some natives felling trees and clearing bush: it had probably been dropped by the mother in escaping from a tree which was being felled. I kept it for eight days, feeding it on neat sweetened condensed milk, and occasionally a little water. It seemed to thrive on this diet and relieved itself naturally and regularly. I therefore sent it back to Kilosa in charge of a native who was looking after my other animals: it died three days later (♂. 75. 98. 25. 18 mm.).

The Chanzuru specimen would be about two months old when caught (23. iii. 23), and became very tame, showing a great liking for chicken bones. At the end of a month it was found to be heavily infested with lice, which were destroyed by a single application of paraffin and camphorated oil well rubbed in. The fur assumed its normal appearance in two days, but an eczema, which had been present before, gained ground, and would not react to treatment, so that I had to chloroform the little creature on 23. v. 23.

The Rufigi lemur was adult when captured, and though I kept it for three months it was wild and intractable; it had a very hearty appetite, but having already described the dietary of a Morogoro lemur there is no object in repeating it.

GALAGO SENNAARIENSIS Less.

Three specimens were purchased at Usshora, Sanga, and Sagayo; a fourth which was brought to me alive escaped shortly afterwards. Though adult it did not bite much, but drew blood when it did. The very red eyes are rather a striking feature of this little grey lemur.

♂. 135. 230. 65. 38 mm. (Sagayo); ♀. 180. 250. 65. 38 mm. (Usshora). The latter, killed by a dog, had a large foetus *in utero* very near birth: ♂. 60. 75. 32. 15 mm.

CHIROPTERA.

Few native languages have specific names for the Bats, though many distinguish between the Megachiroptera and Microchiroptera. The general name for bats in Kinyamwezi and Kisukuma is Tunge; in Kikami it is Ndema; in Kisigara, Gombarema, though in South Usagara Kipurabutu is often employed, though it may be specific for *Pipistrellus nanus*. In Chigogo a bat is Ibudibudi, in Kinyaturu Tai, in Kiramba Tule.

Fruit-bats in Kibena are Wenbelema, in Kisagara Pulagutwi. Insectivorous bats in Kinyamwezi are Tuvugulima, in Kibena Mbudibudi.

PTEROPIDÆ.

ROUSETTUS LEACHI A. Sm.

A single specimen from Bagilo on 6. v. 22. ♂. 130. 30. 230. 30. 270 mm.

EIDOLON HELVUM Kerr.

A single specimen was found hanging on a tree in a native maize plot at Malaka on 27. iii. 22. ♂. 195. 0. 35. 20. 364 mm.

EPMOPHORUS LABIATUS Temm.

Two males of this Epauletted Fruit-bat were shot in a coconut palm and mango tree at Kilosa on 8. v. 23. At times Fruit-bats of this genus are very numerous, and at others only one or two can be found after much search. The larger measured 120. 0. 20. 20. 190 mm.

EMBALLONURIDÆ.

TAPHOZOUS MAURITIANUS Geoffr.

A specimen of the Tomb Bat was shot from the trunk of a cocoanut palm at Kilosa, where they are numerous. One was seen on a baobab at Itende. Parasites in the shape of Nycteribids were found in the fur of the Kilosa specimen.

LIPONYCTERIS NUDIVENTRIS Cretz.

Twelve specimens from Mtali's and Shandwa, where they were found in fissures of the rocky kopjes by my collector. The largest male measured 95. 15. 10. 10. 195 mm., and female 100. 11. 14. 10. 202 mm.; both from the latter locality.

PETALIDÆ.

NYCTERIS CAPENSIS A. Sm.

Twenty-four specimens from Kilosa, Itende, Igulwe, Suna, and Gwao's from culverts, hollow baobab trees, a darkened vacated

room in company with *H. caffer*, and flying in a lighted room. Quite a hundred individuals emerged from one baobab.

The largest male measured 58. 44. 10. 25. 125 mm., and female 55. 60. 10. 33. 130 mm.; both from Kilosa.

NYCTERIS HISPIDA Schreb.

A male from Madazini, near Kilosa, and a female from Bagilo. The former flew into a lighted tent. ♂. 45. 38. 8. 15. 110 mm. ♀. 60. 45. 5. 30. 120 mm.

NYCTERIS LUTEOLA Thos.

Nine specimens from Kilosa and Sagayo. The seven Sagayo bats were brought to me by a native, who caught them in a burrow occupied by a porcupine. Largest ♂ 65. 56. 11. 31. 160 mm., and ♀ 65. 64. 10. 33. 154 mm.; both from Kilosa.

NYCTERIS MARICA Kershaw.

A single specimen, the type, from Tindiga near Kilosa.

MEGADERMIDÆ.

LAVIA FRONS REX Miller.

The Yellow-winged Bat was met with in thorn-bush at Msimba, Kilosa, Mlewa's, Mtali's, Wembere Flats, Nduguyu River, and Sagayo, but purposely not collected.

CARDIODERMA COR (Peters).

Two male Big-eared Bats flew into a lighted room (8 p.m.) at Usshora. They measured 80. 40. 17. 38. 170 mm. and 70. 40. 17. 38. 185-400 mm.

HIPPOSIDERIDÆ.

RHINOLOPHUS LOBATUS Peters.

A single specimen flying in a lighted room at Kilosa. ♂. 55. 25. 8. 15. 130 mm.

One of these bats made three attempts to pick off a moth (*Cylegramma latona*) which was bumping along a lighted ceiling. The third time it was successful (Kilosa, 14. v. 23).

HIPPOSIDEROS CAFFER Sund.

Thirty-two specimens of this Horseshoe Bat were taken at Frere Town, Kenya, Kilosa, and Mbala, flying in a lighted room, in an uninhabited room, and a rock cavern respectively. Of these, nine were males and twenty-three females. They exhibit a great deal of variation in colouring, some being nearly as red as *H. ruber*, others grey or brown. Largest ♂ 55. 35. 7. 15. 130 mm., and ♀ 56. 34. 7. 10. 130 mm.

One female had three huge maggot-like adult female dipterous (*Ascolepteron* sp.) embedded beneath the skin of the elbow-joint of both wings. Many had Nycteribids (*Penicillidia pachymela* Speiser) in their fur, which Major Austen informs me has previously been recorded from Somaliland but the host was unknown.

HIPPOSIDEROS RUBER Noack.

Five specimens from Kilosa and Mbala, where they were taken in company with flocks of *H. caffer* in an uninhabited room and rock cavern respectively. Largest ♂ 55. 35. 8. 14. 145. 333 mm., and ♀ 55. 33. 10. 14. 152-342 mm.

HIPPOSIDEROS MARUNGENSIS Noack.

A single male of this huge Horseshoe Bat was shot at Kilosa (8. v. 23) as it was hanging alone from the midrib of a banana leaf at a height of 12 feet from the ground, the palm being near the bridge below the boma. ♂. 106. 36. 21. 31. 300-642 mm. It measured 25½ inches across the outstretched wings. The only parasite was a mite (larva of a Trombidid) on one of the wing-membranes.

VESPERTILIONIDÆ.

PIPISTRELLUS NANUS Peters.

Known as Kimburugutu in Kikami.

Three male Banana Bats were collected. Two of these were flying at Kilosa, and one was found between the stem and the leaf-stalks of a banana palm, so that they are not wholly dependent on bunches of bananas as would appear from Lang and Chapin's field-notes. Largest ♂ 40. 37. 8. 10 mm.

PIPISTRELLUS KUHLII FUSCATUS Thos.

A male from Bagilo on 6. v. 22 measured 60. 40. 5. 7. 110 mm.

GLAUCONYCTERIS ARGENTATA Dobs.

Sixty-four specimens from Kilosa were killed by two shots from a .410 collecting-gun; my collector had no idea that he had killed so many till he began to gather them up. As many more flew away from neighbouring banana palms, so that they must be very numerous at certain seasons. Males predominate in an extraordinary way, as there were only eighteen females. All were measured, but 49 were almost identical in their dimensions, viz. 50. 45. 8. 10. 140 mm.

The ovaries of all the females were examined for fetuses, but without result. The stomachs of more than a score were scrutinised, but the contents were too finely masticated for recognition of any insect, nor were any internal parasites visible

under a hand-lens. Four mites (*Pteroptus*) were found upon wing-membranes, but apart from these they appeared free from parasites.

GLAUCONYCTERIS VARIEGATA Tones.

A single male was found hanging to the ceiling boards of the verandah roof one morning at Kilosa, 18. i. 22. ♂. 47. 53. 7. 12. 150-330 mm.

MOLOSSIDÆ.

CILEREPHION LIMBATUS Peters.

Fifteen Free-tailed Bats of this species were obtained from the roof of my house at Kilosa, where they were a great nuisance on account of the strong smell caused by the accumulation of their defecations above the lining boards. They do not leave the roof till it is very nearly dark. Between 4.30 and 5.30 a.m. they return, making a great swishing noise with their wings—like a ruler struck through the air. This is preparatory to going to roost for the day, which is done to the accompaniment of much squeaking and twittering as they take their places and scuffle along the ridge pole. It is by no means uncommon for them to fly against the gauze meshing of the verandah and fall to the ground. Though *H. caffer* is as common about the house it does not do so, but skilfully avoids all obstacles.

The largest male measured 56. 38. 7. 14. 125-282 mm., and female 60. 40. 10. 18. 128 mm.

CILEREPHION EMINI de Winton.

My native collector secured ten specimens from beneath a large slab balanced on a boulder at a height of five feet from the ground at Sagayo.

The largest of four males measured 73. 34. 8. 17. 146 mm., and of six females 72. 36. 7. 18. 155 mm.

MOPS OSBORNI Allen.

Five specimens of Osborn's Bat were taken in a hut at Kisumu, where, to judge by the smell, they are excessively abundant in many of the buildings. This very distinct species has only been known from Leopoldville, Belgian Congo, where it was collected by the American Museum Expedition; by the present record its range is considerably extended to the east.

All the bats of this family are a nuisance when they take up residence in dwellings, and I have found them very difficult to dislodge. One of the best methods is to fill the space between roofing-iron and ceiling boards with sprays of thorny mimosa, which presumably tear their wings and cause them to seek shelter in someone else's house not so fortified.

The only male measured 84. 47. 13. 16. 180 mm., and largest female 80. 45. 12. 16. 175 mm.

INSECTIVORA.

ERINACEIDÆ.

ATELERIX HINDEI SOTIKÆ Heller.

Kalunguyeye in Kinyamwezi, Kilungumesu in Kisukuma, Kinenyifuri in Kibema, Sejesi in Chigogo (also in use among the Wasagara in such parts of their district as the hedgehog occurs), Kengye in Kinyaturu, Kilongomegia in Kiramba.

Of the five hedgehogs collected at Gwao's, Pooma, and Usshora, only one was a male. Most of these were kept in captivity for some time as well as others which escaped. They will drink milk immediately after capture and eat meat readily after considerable chewing. One was seen crossing the road in the moonlight and ran with surprising swiftness. The natives of Singida District stated that they were not at all uncommon. A young one no larger than a tennis ball escaped from a deep wash-basin.

♂. 180. 22. 29. 26 mm. Largest ♀. 175. 18. 28. 25 mm. Stomach of the latter was full of minced insect remains and parasitic worms (*Physaleptera clausa* Rud.). At Pooma the body of one was found disembowelled in the neighbourhood of a kopje; it had evidently been killed by one of the carnivora.

MACROSCELIDÆ.

RHYNCHOCYON PETERSI PETERSI Bocage.

Zagari in Kikami, Mbulusanje in Chigogo. All Elephant Shrews are Sangi in Kiswahili irrespective of species.

A single pair from the Usambara Mountains, which is the type-locality of *R. p. usambara* Neum., considered a synonym of *R. p. petersi*.

RHYNCHOCYON SWYNNERTONI Kershaw.

Zozo in Kikami, but Konghole amongst the Wakami of Mikesse.

A single pair of this recently described Elephant Shrew were obtained by my collector from the type-locality Kipera on 25. ix. 22, after a great deal of trouble, as they take refuge in the long grass immediately they are sighted. I also saw one of these spotted Elephant Shrews cross the road near Madazini. The male measured 370. 240. 67. 34, and the female 250. 205. 67. 31 mm.

PETRODROMUS MATSCHIIE Neum.

Two females, an adult and immature, from Mahaka and Izikisia respectively, the adult measuring 220. 170. 50. 38 mm.

PETRODROMUS NIGRISETA Neum.

Sangi in Kikami and Kiswahili.

Two were collected at Kipera; it was also occasionally seen at Kilosa, Chanzuru, Kimamba, and Bogoti.

ELEPHANTULUS PULCHER Thos.

Ten specimens from Sanga, Lalago, and Sagayo. Largest male measured 140. 110. 31. 20 mm., and female 140. 121. 31. 23 mm. Many ticks (*Rhipicephalus* sp. nymphs) were taken from the nape of one specimen.

ELEPHANTULUS OCULARIS Kershaw.

Bulu in Chigogo.

Three specimens from the type-locality Dodoma and from Kidenge. Seen at Igulwe. Occasionally taken in rat-traps, which they probably visit for the ants which are attracted by the bait. ♂. 135. 126. 30. 20 mm. ♀. 135. 126. 30. 20 mm.

ELEPHANTULUS RENATUS Kershaw.

Bulu in Kinyaturu.

Six specimens from Suna, Gwao's, and Mtali's, of which Gwao's was selected as type-locality. It was also seen at Pooma. They have their runways in scattered thorn-bush, the soil is sandy or reddish loam. At night they retire into burrows from which the natives dig them in the early morning, as the Elephant Shrews do not appear to stir until the sun has warmed the chilly morning air. Suna specimens were taken in rat-traps.

Largest ♂ 127. 118. 35. 23 mm., and ♀ 140. 130. 32. 21 mm.

SORICIDÆ.

CROCIDURA MARTIENSSENI Neum.

A single female from Bagilo, Uluguru Mts., 13. vi. 22, measured 150. 100. 20. 5 mm.

CROCIDURA FLAVESCENS Geoffr.

Moonyoonhe in Kikami, Kinyunga in Kisagara.

Two specimens from Kilosa were taken in a rat-trap, where they had probably gone for insects eating the bread bait. Three more were found clinging to maize- and grass-stalks in a flooded area during the rains. ♂. 98. 60. 23. 12 mm. ♀. 95. 58. 15. 11 mm.

A skull was found among the pellets of a Barn-Owl (*Strix f. maculata*), one was recovered from the stomach of a One-streaked Hawk (*Kaupifalco monogrammica*), and another from a snake (*Ramphiophis oxyrhynchus*).

CROCIDURA HIRTA Peters.

Kirukangia in Kiswahili, Nzunga in Chigogo, Junga in Kinyaturu and Kiramba.

Six specimens from Dar es Salaam, Gwao's, Pooma, and Izikisia. Three of these were taken in rat-traps with meat bait. The Dar es Salaam shrews were found beneath heaps of grass and

garden refuse in open spaces in the middle of the town, where two half-grown specimens were met with on the same date (21. vi. 23). Largest ♂ 90. 60. 13. 9 mm. (Izikisia), and ♀ 85. 50. 10. 5 mm. (Dar es Salaam).

The Swahili name for a shrew is connected with a widespread belief common to almost all tribes, viz., that a shrew can follow a path or road but cannot cross it; if it attempts to do so it will immediately fall dead. This legend has obviously been invented to account for the not infrequent finding of dead shrews in the road, as is also the case in England. The true cause of death is that they have been pounced upon by genets and mungoose, who, on discovering the pungent smell of their prey, abandon them.

CROCIDURA HINDEI Thos.

A female from Nairobi, measuring 80. 41. 13. 10 mm.

CROCIDURA BICOLOR ELGONIUS Osg.

A female from Eldoret, measuring 45. 31. 9. 7 mm.

RODENTIA.

SCIURIDÆ.

ÆTHIOSCIURUS BYATTI Kershaw.

Six examples from Bagilo, Uluguru Mts., of this species so recently described from the Usambara Mts. further impresses me with the correspondence between the mammal and bird faunas of these widely separated mountain ranges.

Largest ♂ 240. 160. 60. 30 mm.; largest ♀ 240. 190. 40. 30 mm.

HELIOSCIURUS RUFOBRACHIATUS NYANSÆ Neum.

Five specimens from Chantwara, of which the largest male measured 245. 270. ? ? mm., and female 250. 235. 55. 21 mm. (native measurements).

HELIOSCIURUS UNULATUS UNULATUS True.

A male and female only from Bungu, Usambara Mts.

PARAXERUS PALLIATUS SUAHELICUS Neum.

This Red Squirrel is known as Kimhulindi in Kikami, Chimweje in Chigogo, Sindi in Kinyaturu, Kitungu in Kinyiramba.

Nine specimens from Bogoti, Mkata River, Mbweni, Kipera, and Madazini; also seen in dense maiombo scrub at Ndogwe. It is chiefly found in the tangled undergrowth on the banks of dry water-courses, or in the big trees where patches of primary forest still survive. A few were seen in thorn-trees.

The largest male measured 215. 160. 40. 15 mm., and female 210. 240. 48. 22 mm. Another female of practically the same dimensions held a single diminutive fœtus (Mkata, 24. viii. 21).

They spend a good deal of time running about among the dry leaves beneath bushes picking up food, nibbling here and there, and catching insects. The stomach contents showed vegetable matter like finely powdered meal, with traces of chlorophyll probably representing leaves.

One individual had a mite and three lice in its fur, and a parasitic worm (*Streptopharagus* sp.) in its stomach.

The bodies were eaten by my Wahehe and Wabena porters, and I was told the Wakami also relish them.

PARAXERUS OCHRACEUS OCHRACEUS Huett.

This Olive Squirrel is called Kifrooma in Kikami, Kaderi in Kisagara, Ndabi in Kinyaturu, Kipumbu in Kiramba.

Four skins from Mkindo and Mkata Rivers and Ulugu. It was also seen by my collector at Mbonoa. At the second locality it was found in association with *P. p. suahelicus*, which on two occasions it was seen pursuing. Another was observed jerking its tail and chattering in unison with a bird.

Two males measured independently were 155. 160. 38. 18 mm., a female 150. 160. 45. 17 mm. The bodies were eaten by the Wahehe and Wabena porters.

CRICETIDÆ.

DIPODILLUS LUTEUS Dollm.

Mbadya in Chigogo, Lebwa in Kinyaturu, Munsa in Kinyiramba, Bewa in Kisukuma.

Twenty-seven specimens from Igulwe, Gwao's, Mbulu's, Pooma, Mdjengo's, Simbo, Nyambita, and Sagayo. It appears to be restricted to dry thorn-bush country, with perhaps a preference for sandy soil. These specimens were obtained by offering a reward to the local natives, who dig them out of their holes with spears, and having killed them, insert the head beneath a piece of string tied below the knee, and return to camp with the pendent bodies and tails of the gerbils swinging to and fro.

Largest ♂ 80. 90. 15. 10 mm., and ♀ 80. 92. 18. 9 mm. The tails and ears of many seemed to be scurfy and diseased.

TATERONA VICINA VICINA Peters.

Panya in Kinyaturu. This was stated to be specific, but this is doubtful as it is the blanket name in Kiswahili for all rats.

Twelve Gerbils from Tindiga, Kimamba, Chanzuru, Uliya, Mbala, Kisanga, Mbonoa, Pooma, and Mlewa's. They were dug out of their burrows in grass-country.

Largest ♂ 172. 174. 33. 20 mm., and ♀ 160. 135. 34. 20 mm.; both from Mlewa's.

One of this, or the next species, was found in the stomach of a hawk (*K. monogrammica*).

TATERONA SWAYTHLINGI Kershaw.

Thirty specimens from Dakawa, Ilonga, Chanzuru, Kilosa, Pwaga, and Ikikuyu. A large series from Kilosa were trapped in ordinary rat-traps baited with bread. Some of the others were dug from their burrows, which were unlined; as many as five individuals were found in a single burrow. These holes are scattered throughout the maiombo bush, usually in small groups or colonies.

Largest ♂ 175. 180. 35. 25 mm., and ♀ 158. 165. 38. 22 mm. Occasionally they may be seen in daylight; two young individuals (♂ . 70. 80. 26. 14 mm.) were observed by the side of the road at Kilosa on 16. vii. 21, and one being killed was found to be swarming with parasites.

One was recovered from the stomach of a Genet (*G. suahelica*).

TATERONA MUANSÆ Matsch.

Nangala in Kinyiramba.

Four specimens from Dombolo and Sagayo. Largest ♂ 150. 170. 35. 22 mm., and ♀ 148. 180. 34. 21 mm.; both from the first locality.

TATERONA TABORÆ Kershaw.

A single female from Izikisia near Tabora. 160. ? 35. 20 mm.

RHIZOMYIDÆ.

TACHYORYCTES IBEANUS Thos.

A pair from Nairobi ♀ . 180. 68. 30. 8 mm.

TACHYORYCTES DÆMON Thos.

A pair from Engare Mtoni near Mt. Meru.

MURIDÆ.

DENDROMUS OCHROPUS Osg.

A pair from Nairobi. ♂ . 70. 87. 16. 10 mm. ♀ . 70. 87. 16. 10 mm.

DENDROMUS PUMILIO Wagn.

A female was found at Kipera building its nest attached to grass stems, nest six feet from ground. ♀ . 62. 85. 10. 5 mm.

STEATOMYS LOVERIDGEI Thos.

Tulu in Kinyaturu, Ndolee in Kinyiramba.

Seven specimens of this Fat Mouse were taken at Pooma and Mdjengo's. This species was hitherto only known from the type collected by the writer at Lumbo in Portuguese East Africa; its range is considerably extended by these new records. ♂. 85. 40. 12. 15 mm. ♀. 82. 35. 14. 17 mm.

STEATOMYS MUANSE Kershaw.

Ngoso in Kisukuma.

Three specimens of this new mouse from Nyambita and Sagayo have been dealt with by Mr. Kershaw. ♂. 76. 26. 13. 12 mm. ♀. 55. 35. 13. 12 mm. They were found running about on and beside the footpath between 7 and 10 p.m., and killed with canes.

GRAMMOMYS SURDASTER SURDASTER (Thos. & Wrought.).

Five rats from Bagilo, Bogoti, and Tindiga. Largest ♂ 115. 150. 30. 30 mm. ♀. 110. 70. 35. 18 mm.

RATTUS RATTUS ALEXANDRINUS Geoffr.

Mbewa in Kikami, Ngule in Kisagara and Chigogo, Koho in Kinyaturu, Mkinki in Kinyiramba, Ngoso in Kisukuma.

Twenty specimens of the Black Rat were collected at Nairobi, Dar es Salaam, Ilouga, Kilosa, Dodoma, Suna, Gwao's, Pooma, Mdjengo's, and seen at Sagayo.

The largest male measured 175. 165. 35. 21 mm., and female 145. 162. 30. 20 mm.

It seems to be living alongside the local *R. c. microdon* in perfect harmony, both species being not infrequently taken in traps set in the same native hut. I found both species clinging to the back of a meat-safe this evening (Kilosa, 21. xii. 22).

On moving a large cupboard in the office a rat's hoard (it could hardly be called a nest) was found. In it were three unopened and almost ungnawed letters, which had been in an outward dispatching tray on May 31st last. One of these communications was of importance and its loss at that time gave rise to considerable correspondence (Kilosa, 31. xii. 22).

Another rat dragged a pair of cycling-stockings from a chair down a hole; they were there a month and fortunately had never been missed, or the blame would surely have fallen on some hapless native (Kilosa, 24. xii. 22).

On one occasion a live rat was brought to me with hind feet enormously swollen, and three cavities in them seemed to indicate the evacuated holes of larval *Caudoxylobia* sp. (Kilosa, 27. vii. 22).

I saw a young rat in the middle of the morning running rather blindly along by a wall, and on killing it found it to be swarming

with fleas (*Xenopsylla brasiliensis* and *cheopsis*), of which I captured twenty-four. The former flea was taken on another specimen at Kilosa, and *X. cheopsis* from a rat's nest in a pantry at Nairobi. Most of the twenty-four were about the rat's head and fore parts, quite half-a-dozen around its eyes—perhaps this accounted for the strange way it ran into and along the wall (Kilosa, 31. xii. 21).

Black Rats were found in the stomach of a Serval (*P. c. hindei*) and of a Wild Cat (*P. o. ugandae*), but their chief enemy at Kilosa would appear to be the Barn-Owl, in whose nest many skulls were found. Puff-Adders also account for a few.

RATTUS (ÆTHOMYS) WALAMBÆ PEDESTER Thos.

A single male from Kakindo on 15. i. 23.

RATTUS (ÆTHOMYS) CHRYSOPHILUS SINGIDÆ Kershaw.

The two types from Gwao's, and one from Mdjengo's.

RATTUS (PRAOMYS) DELECTORUM Thos.

A female from Bagilo, on 17. vi. 22, measured 100. 120. 30. 30 mm.

RATTUS (MASTOMYS) COUCHA MICRODON Peters.

Mbuku in Kikami, Ngobari in Kisagara, Mbanyalusangha in Chigogo, Bebea in Kinyaturu, Lituri in Kinyamwezi, and Kungu in Kinyiramba.

Eighty-five specimens from Bagilo; Wami, Mkindo, and Mkata Rivers; Rudewa, Ilonga, Kimamba, Kilosa, Kipera, Rumruli, Mpanira, Ndogwe, Gwao's, Mbulu's, Pooma, Tabora, Izikisia, Sanga, Sugayo, and Koma.

It is a garden rat, particularly numerous in the cultivated plots of the natives; when food is scarce it takes to the grain stores in the roofs of the native huts where, owing to their numbers, they must do a great deal of damage.

The largest male of this line series measured 135. 114. 22. 19 mm., and female 130. 112. 22. 19 mm.; both from Ilonga. Specimens from the thorn-bush steppe seem to average smaller and are paler, but can be matched by individuals picked out from the Kilosa District series. The grey pelage of the younger individuals tends to become a deep nut-brown as they grow older.

Three females trapped at Kilosa on 25. i. 21 had 7, 8, and 11 embryos respectively. A female from Ilonga on 30. iii. 23 had six fetuses. At Kimamba on 7. iv. 23 a litter of nine were found in a burrow with their mother. Of these nine, one had a white blaze on its forehead.

A flea (*Xenopsylla brasiliensis*), larvæ of *Caudylobia* sp., and nematode worms were taken from these rats.

These Rodents form the staple diet of many wild creatures,

and were recovered from the stomachs of a Civet (*C. c. orientalis*), Genets (*G. suahelica* and *G. d. neumanni*), Mongoose (*M. flaviventris*), Pearly Owl (*G. perlatum*), Red-necked Falcon (*F. ruficollis*), and Banded Harrier Eagle (*C. fasciolatus*). One was disgorged by a House Snake (*B. lineatus*) when captured, and many species of snakes in captivity fed upon them.

RATTUS (MASTOMYS) COUCHIA HILDEBRANDTHI Peters.

Two specimens from Bissel Camp near Longido in 1916.

MUS MUSCULUS Linn.

A single female of the European Mouse with two new-born young arrived at Kilosa on 8. i. 21 in a box of groceries dispatched from Dar es Salaam two days before. ♀. 68. 76. 15. 11 mm.

LEGGADA BELLA BELLA Thos.

Kidangi in Kikami, Chimhanga in Chigogo.

Six Pigmy Mice from Dar es Salaam, Kilosa, Dombolo, Sagayo, and Nyambita. One was caught in a tent at Itende, but subsequently escaped. They are not infrequently found in houses.

Largest ♂ 55. 45. 12. 9 mm., ♀ 56. 42. 13. 9 mm.

A nest of very simple construction was found beneath a heap of rotting grass. The nest measured 40 mm. in diameter, and was perhaps 30 mm. deep in the cup. The dead grass of which it was constructed was not woven but loosely yet neatly interlaced to form a cosy cup, a few stalks formed a skeleton roof, but it could not be considered properly domed. It held three blind young ones of a dark fawn colour unlike their parent; one opened its eyes on the 20th inst. (Dar es Salaam, 18. v. 23).

What appeared to be one of these mice was found in the stomach of a Whistling Hawk (*A. sphenurus*?) at Wami River on 9. ix. 21.

CRICETOMYS GAMBIANUS OSGOODI Heller.

Nchesi in Kikami.

Seven specimens from Bagilo. There is also one in the Game Dept. collections killed by Capt. Turnley at Kilosa on 14. ix. 22. It must be very scarce at Kilosa, as my collectors never met with it there.

The only male measured 410. 390. 80. 50 mm., largest female 380. 390. 72. 47 mm. They were trapped in native gardens, where they are said to go to eat the maize.

LOPHUROMYS AQUILUS AQUILUS Trre.

Twenty-five Harsh-furred Mice from Eldoret, Mkindo River, and Bagilo. Of twenty-three specimens from the last locality the largest male measured 140. 90. 25. 15 mm., and female 150. 90. 20. 10 mm. Dipterous larvæ found in these rats have been identified as *Candylobia rodhaini* Gedoolst by Major Austen.

ACOMYS SELOUSI de Wint.

Meru in Kikami.

A pair from Mkindo River on 5. ix. 21. ♂. 97. 65. 16. 16 mm.
♀. 85. 74. 18. 14 mm. Another was trapped near Mkata River,
but too damaged to be preserved. Like so many animals with
spinous fur or quills, the skin is very delicate and readily
tears.

PELOMYS FALLAX FALLAX Peters.

Five specimens from Bagilo, Tindiga, and Rumruli. The
largest male measured 180. 160. 32. 20 mm., and female 140. 150.
30. 20 mm.

ARVICANTHIS ABYSSINICUS RUBESCENS Wrought.

Four males from Kakindo and Kabare. ♂. 130. 82. 25.
10 mm.

ARVICANTHIS ABYSSINICUS MUANSE Matsch.

Thirteen specimens from Sanga, Lalago, Shanwa, and Sagayo
in Mwanza. They are very numerous, using their well-marked
runs in daylight. Largest ♂ 140. 110. 26. 10 mm., ♀ 129. 105.
25. 16 mm.

ARVICANTHIS ABYSSINICUS NAIROBÆ Allen.

Ten specimens of this well-known form were collected in the
garden at Nairobi, where they might be seen foraging near
the servants' quarters whenever it was quiet.

ARVICANTHIS ABYSSINICUS VIRESCENS Heller.

Five specimens from Eldoret, of which the largest male
measured 160. 122. 31. 23 mm., and female 140. 113. 30. 18 mm.

ARVICANTHIS ABYSSINICUS NEUMANNI Matsch.

Fudi in Chigogo, Puku in Kinyaturu, Kongo in Kiramba.

Fifty-five from Kidenge, Mpanira-kwa-Sagoi, Ikikuyu, Dodoma,
Mbona, Suna, Gwao's, Mbulu's, Pooma, Singida, Mtali's.

A distinct trace of a dorsal stripe in Suna specimens was
noticeable when they were alive.

Fleas (*Xenopsylla brasiliensis*) were found in the fur of
Dodoma and Mbulu rats.

These rats were recovered from the stomach of an Augur
Buzzard (*B. augur*) at Dodoma, and also from that of a Kite
(*M. a. parasitus*) at Mtali's. Two were found in the stomach
of one large House Snake (*B. lineatus*) at Gwao's.

ARVICANTHIS TENEBROSUS Kershaw.

Twenty-nine specimens from Mtali's, Izikisia, and Tabora.

Mr. Kershaw described this rat as a race of *A. abyssinicus*, but this cannot be the case, as *A. a. neumanni* is found at Mtali's. They are quite distinct. *A. a. neumanni* haunts roads, paths, and open thorn-bush, whilst *A. tenebrosus* was taken entirely from gardens where the natives were cultivating maloga or sweet potatoes.

Largest ♂ 160. 135. 34. 20 mm., ♀ 160. 135. 34. 20 mm.; both from Mtali's, where only three were collected. Tabora rats were all smaller, the biggest being only 145. 110. 29. 18 mm.

Three White-faced Scops Owls (*O. l. granti*) had each one of these rats in its stomach (Mtali's, 19. x. 21). Also in that of an Augur Buzzard (*B. augur*) on the same day.

LEMNISCOMYS GRISELDA ROSALIA Thos.

A single male from Mkindo River on 5. ix. 21 measured 130. 138. 27. 14 mm. A new-born young one, with eyes still unopened, was found in the roadway at Kilosa on 29. iii. 21. Yng. 55. 32. 12. 3 mm.

LEMNISCOMYS MACCULUS MACCULUS Thos. & Wrought.

A single male from Kabare on 1. ii. 23 measured 120. 130. 26. 15 mm.

LEMNISCOMYS ALBOLINEATUS Osg.

Nyagalla in Chigogo, Kuse in Kinyaturu, Kohe in Kiramba.

Seven specimens from Ndogwe, Suna, Gwao's, Pooma, Mtali's, Kadala, and Izikisia. It was also seen at Mbulu's and Mlewa's. They run about on paths and in the roadway in the early morning, and seek refuge in the manyara hedges. They are not very numerous.

Largest ♂ 110. 118. 25. 14 mm.; ♀ 110. 115. 24. 14 mm.

RHABDOMYS PUMILIO DIMINUTUS Thos.

Two males from Eldoret and Rumruli. ♂. 100. 82. 20. 13 mm.

OTOMYS ANGONIENSIS ELASSODON Osg.

A pair of Swamp Rats were collected at Rumruli on 17. vii. 22.

OTOMYS NYIKÆ CANESCENS Osg.

Two adults and one immature specimen from Nairobi, the young one doubtfully referable to this species. ♂. 151. 91. 27. 18 mm.

PEDETIDÆ.

PEDETES SURDASTER subsp.

The Springhaas is called Kupa in Kiswahili, and Kamandegeri in Kinyamwezi.

A pair were purchased at Tabora on 18. xi. 21. ♂. 305. 320. 130. 71 mm. ♀. 420. 420. 130. 71 mm. The immature male is in perfect pelage; the female has bare patches on her back, possibly resulting from scratching sores. Burrows were common at Mbonoa and Suna; at the latter place one Springhaas was trapped, but a jackal carried it off. I followed the spoor, and saw the jackal.

HYSTRICIDÆ.

HYSTRIX GALEATA Thos.

The Porcupine is known as Nungu in Kiswahili, Kibena, Kikami, Kisagara, Chigogo, Kinyaturu, and Kinyirumba; Huna in Kisukuma.

Five specimens only collected, three others seen, and quills found, at Rumruli, Kipera, Kilosa, Pooma, Shanwa, Sagayo.

The largest male measured 1160. 70. 75. 40 mm., and female 827. 65. 75. 39 mm. Native measurements; both animals from Sagayo.

At Sagayo was a porcupine expert who, I heard, had dug out four of these animals the week prior to my arrival. I therefore engaged him for a week, to study his methods. He first sends his small boys (two at least were his own sons, and wore only the clothes they were born in) to find tracks and follow them to the earth where the porcupine is lying-up. They then fetch their father, who then sticks a horn in each entrance of the burrow. These horns (Topi, Thomson's Gazelle, and Roan, also a large wart-hog tusk) are filled with a pitch-like substance, into which beads have been stuck before it hardened. The result of this is medicine said to prevent any animal that is in the burrow bolting from the entrances, and at the same time robs them of their ferocity so that they will not attack anyone entering the burrow; this is very necessary, as at times jackals or a hyæna are found in the earths.

Having done this, one or more of the small naked youngsters are sent down the hole and follow the course of the burrow underground, sometimes to a distance of thirty or forty feet. I myself have seen a length of thirty feet. On locating the animal at the terminus of the burrow they knock on the roof, and the rest of the party, who are listening for this, reply, and mark the spot. A shaft is then sunk, and so nicely judged in the three instances where I was present, that it breaks into the gallery within a foot of the porcupine who is at the terminus of the burrow. While the shaft is being sunk, sometimes the boy

remains in the gallery, singing and shouting to prevent the animal breaking back; so it would appear that not too much faith is placed upon the virtues of the horns.

The youngsters enjoy their work hugely, and have dark rings chalked round their eyes "to enable them to see in the dark." They are simply smothered in red soil, for, indeed, when not otherwise occupied, they play hide-and-seek in the galleries, and pop up unexpectedly from the various entrances, or turn somersaults in the dust.

When the porcupine is uncovered he is speared to death, and being very tenacious of life, does not succumb to wounds that would kill any other animal. In the case of those unearthed for me, I shot them. One of these was shot through the head with a .22, and I supposed was about dead. I therefore told the "fundi" to bring it out of the burrow, and so demonstrate the truth of his statement that he could handle porcupines with impunity. He was very reluctant, but, pressed by the onlookers, took hold of the animal, which promptly drove four quills into his palm. One of the youngsters sucked the wound, whilst another fetched some green leaves, which he chewed into a paste and spat upon the wounds, with the object of preventing their hurting. Nevertheless, the "fundi" stated next day that he had been unable to sleep from the pain in his hand. I came to the conclusion that, as a medicine-man, he was a downright fraud.

When given a *coup de grâce*, a porcupine's rattle is very active, and every quill in its body vibrates and rattles.

The fundi told me that last month he found two females occupying the same burrow, each having two young, the normal number. The nipples are situated on the side just behind the fore-limbs.

They all swarmed with a very large species of flea (*Parodontis riggenbachi*), which transferred themselves to my skinners, to the latter's great discomfort.

BATHYERGIDÆ.

HELIOPHOBIUS EMINI Noack.

This Blesmol is known to the Wakami and Wasagara as Fuko.

It would appear to be far from common, as only a single pair (♂. 160. 12. 32. 0 mm., ♀. 180. 14. 30. 0 mm.) were obtained during the three years. Both were taken at Kipera on 5. v. 23.

The presence of these burrowing rodents is made manifest by the heaps of fresh soil, as large as a mole-hill, which they will excavate in the course of a single night. The female was obtained in a mealie shamba by digging some six feet along, the blesmol being found at the terminus, which was only some eighteen inches below the surface. My collector said that it was but a poor method of catching them, as one might dig for hours without overtaking one, and if the excavated soil was fresh the way to capture them

was to uncover the hole and blow down the entrance, when the blesmol would return to block it up. You must then prevent its return by pushing a stick behind it before it can get back. He stated that he caught the male in this way.

The stomachs contained finely-gnawed greenish and whitish matter impossible of identification. The natives say they eat ground-nuts (= monkey nuts).

I was told that only females are found, and that possibly males do not come near the surface. This idea has probably arisen from the fact that the testicles are internal, and the penis concealed in a vulva-like opening from which it can be extruded.

The claws of one specimen were sheathed in caked soil, and the silky fur of both had many blobs of the same attached very firmly to the hairs, which do not appear to be so well adapted to the burrowing habits of the blesmol as are those of an English mole.

The only parasites present were some very small mites running over the white skin.

THRYONOMYIDÆ.

THRYONOMYS SWINDERIANUS VARIEGATUS Peters.

The Kiswahili name of Ndesi for the Cane-Rat is in general use throughout the country, and is the only one known to the Wakami, Wasagara, and Wagogo.

Two specimens from Myombo; it was also seen at Mkindo River and Madaziini, all localities in the Kilosa sub-district.

Of three specimens examined the only adult was a male (394. 143. 70. 39 mm.), which was shot when entering a down-pointing gun-trap baited with a live goat! The largest female measured 340. 112. 60. 29 mm., and was speared by a native as it ran across the road.

Both my specimens had fleas (*Ctenocephalus felis*) present, and the head of the female was burdened with numerous grey ticks (*Rhipicephalus sinus* Koch). One specimen was infested with two species of lice (*Scipio aulacodis* Neum. and *Tricodestes mungos* Stebbe).

LEPORIDÆ.

LEPUS VICTORIÆ Thos.

Hares are known as Sungura in Kiswahili, Buga in Kikami, Kisungula in Kisagara, Sungula in Chigogo, and Siyi in Kisukuma.

Five specimens collected at Mbulu's, Mdjengo's, Ushhora, and Sagayo. Hares are easier to see than procure, however, and (spp. non det.) were met with at Kimamba, Kipera, Mpanira-kwa-Sagoy, Ndogwe, Mtali's, Lalago, and Mwadhira.

The Sagayo male (450. 95. 100. 130 mm.) in the Game Dept. collection was taken in a gin set in a burrow, which rather

suggests that hares may make use of burrows at times when the grass is scanty or has been burnt off. Another hare was caught in a gin set for a leopard; the latter came along later and ate the hare—the spoor was very distinct.

The female (480. 73. 100. 101 mm.) from Mdjengo's held two fetuses (24. x. 21). A very small leveret (155. 30. 46. 35 mm.) was brought me at Usshora on 6. xi. 21, having been caught by a dog; a larger one was brought me at Mbulu's on 11. x. 21.

Two individuals from Mdjengo's and Usshora were teeming with fleas (*Ctenocephalus felis* and *Echidnophaga larina*), and the former had numerous grey ticks (*Rhipicephalus simus* Koch) as well.

LEPUS CAPENSIS CRAWSHAYI de Winton.

A single individual was collected at Eldoret on 9. xi. 21.

CARNIVORA.

CANIDÆ.

THOS ADUSTUS NOTATUS Heller.

A fine skin but in poor condition was purchased from a native in Mwanza town, the animal having been killed a few miles outside.

A live Side-striped Jackal from Liwale was given the writer by Mr. C. B. Goss in January 1923, when it had already been in captivity a couple of months. It was kept on a leash, with a small native mongrel for a playfellow, they romped together a great deal. It would allow itself to be carried for miles, and liked being petted, but was a fearful coward and hated being shut up at night, when it would howl mournfully as long as it thought there was some likelihood of being released; it preferred sleeping with the native porters under a tarpaulin.

If quietly approached it would allow anyone to stroke it, but if its coat was combed it snapped in the air several times as a warning, and would doubtless bite if the combing was not stopped. It has never bitten the writer, but came very near doing so on several occasions, and bit a steward on board as well as several natives, all of whom were probably to blame for tactlessness. Its teeth are very sharp, and fortunately it only snaps and does not hold on.

When given food it always menaced the person who brought it, and is probably dangerous at such a time. It ate most scraps from the table, meat, raw or cooked, but not tinned or preserved; it appeared to prefer fowls and fish to beef and mutton. For five months it was fed on maize-porridge and soup bones. It regularly overate the maize, disgorged the surplus and, after half-an-hour's rest, would eat it again. It was fond of rice, milk puddings, cakes, biscuits, bread without crusts, and sweet fruits. Its only drink was water, even soups being rejected.

Its attitude toward other animals, including dogs, was decidedly friendly; it endeavoured to make friends with the cat on board, but she was suspicious. At Dar es Salaam dogs often gathered round it in the hotel yard but appeared to fear it, as they would not approach, but growled and moved away.

The animal was kept on a leather rein for five months till he found he could gnaw it through, which he did ten times. I gave up the contest and allowed him to wander about the ship for a week till, finding his way into the crew's quarters, he dragged some clothes from a bunk along the deck, and seizing on a leather belt carried it off and gnawed it in half. He was then fastened with very light wire-rope, but after forty-eight hours cut through that also.

THOS MESOMELAS MCMILLANI Heller.

Mbweha in Kiswahili. It has no name in Kikami, but is called Kewe in Kisagara, and Nhyewe in Chigogo.

Eight specimens, of which three only were taken by the writer's collectors, from Mkata River, Gulwe, Suna, Gwao's, Mlewa's, Sagayo.

The largest male measured 740. 290. 190. 100 mm., and female 680. 295. 150. 102 mm.

Both of these came from Sagayo, and their stomachs were full of hyrax fur and meat, whilst one had some larger carrion also. The Mlewa specimen had grasshoppers and several large black scorpions (*Pandinus cavimanus* Poc.) in its stomach. It would be interesting to watch a jackal's method of attacking a scorpion. The Mkata specimen's stomach was well filled with the fruit of a tree called by the natives "Mkongo." We came to several of the trees, and amongst the abundant fruit lying on the ground was a good deal of spoor of jackal and civet.

Twelve fleas (*C. felis*) were taken from one jackal.

LYCAON PICTUS subsp.

Mbwizi in Kikami and Kisagara, Iminzi in Chigogo.

The Hunting Dog was not collected nor even seen by me, though it is only too common in the Kilosa District, and was often heard. Whilst I was away from home on one occasion a pack of dogs drove a bushbuck right through the lower part of the house at 6 a.m. Another time they harried a bushbuck past the front of the house at 5 p.m., and Mr. D. W. Bishopp shot one of the dogs from the verandah, but it was not found for three days afterwards, when it was too far gone to preserve. At Myombo, some nine miles south of Kilosa, they pulled down a bushbuck almost on the doorsteps of a settler's house in the middle of the morning. It is interesting to note that bushbuck appear to run to a human habitation when pursued by their remorseless foes.

OTOCYON VIRGATUS Miller.

Bee in Kinyaturu, Bele in Kiramba.

Five males (two being cubs) collected at Mdjengo's, Mtali's, and Sagayo. A score were seen at Izikisia in the moonlight.

The largest male measured 556. 275. 120. 95 mm. One cub died a month after I got it, perhaps it would be six weeks old when it measured 290. 115. 90. 70 mm. Its twin brother was measured whilst alive as accurately as possible at five-and-a-half months old: 470? 250? 120? 94?; he then weighed $6\frac{1}{2}$ lbs.

The two lively little cubs, with eyes open and just able to walk, were brought me at Mtali's on 20. x. 21, their father having been killed by a native dog. At this stage their fur was very woolly and an almost uniform smoky-grey.

At five and a half months the colour was as follows:—Grizzled buff, a thick woolly underfur of buff, almost concealed by long whitish hairs tipped with black. Feet as far up as the knuckles, black; the whole leg is darker than the body. Tip of tail black, extending in a wedge-shape on dorsal aspect almost to root of tail. Muzzle black, extending on the forehead to between the eyes, on the cheeks to beyond the eyes. Tip of the ears and for some distance downwards, black. The ears are fringed with long all-white hairs, a good deal of buff about the base of the ears.

When young I gave them a great deal of meat; one of them ate a green locustid at three weeks old. Another time Kip, as the survivor was called, pounced upon a Striped Hawk-Moth, chewed it well, dropped it, and then ate it up. He is passionately fond of butter and honey, will eat porridge, bread, eggs, and drink milk or tea with relish. Bananas and paupau are also eaten readily, but he will not touch mangoes or pineapple.

He spends a good deal of his time turning over stones in search of millipedes, which are gobbled up greedily. I offered him a black-and-yellow polydesmid which he pawed over for some three minutes, but would not eat it. In strange contrast was his attitude to a Lesser Stink Ant (*Paltothyreus tarsatus*), which came out of its hole and waved its antennæ right under Kip's nose. He looked at it, then seized and crunched it up despite the smell, which was noticeable to me standing a couple of feet away.

A very big baboon came up to the kitchen one afternoon, and aroused Kip's curiosity, the fox then being five months old. He followed the baboon with his head down, and when the baboon, catching sight of me, cantered away, Kip flew after it for two hundred yards with only about six feet between. A month later baboons were in the vicinity of the house daily, and on several occasions I saw him playing with them. He will lie crouched upon the ground, and a big dog-baboon will come walking slowly towards him till within two yards, when Kip will spring up and fly straight at it, the baboon cantering easily away, looking over its shoulder at the small animal which it could so easily kill. Many other baboons will be close by during this play.

Kip's attitude to baboons is very strange seeing that he is naturally a timid animal, very nervous of approach, especially when feeding. Like many animals he developed an antipathy to natives, which was difficult to understand as they were very fond of him, but at four months old he took to menacing them, snarling and growling and looking very wicked. Even when furiously annoyed at being tied up for the night his teeth scarcely break the skin.

He was six-and-a-half months old when he met his first dog—a quiet little mongrel Dachshund which accompanied a visitor. Kip advanced growling and bristling towards the stranger, and exhibited for the first time a large rufous patch on the base of his tail (dorsally).

MUSTELIDÆ.

MELLIVORA CAPENSIS Schreb.

Kibakusi in Kikami; Nyengeri in Kisagara, Kisukuma, and Kiswahili.

The Honey Badger or Ratel is not often met with in East Africa, though probably fairly common and certainly very widely distributed. Four specimens were obtained from Makindu, Wami River, Kilosa, and Sagayo, those from the last-mentioned locality being skins without skulls, purchased from a native. A young male measured 480. 160. 105. 30 mm., an adult 770. 198. 130. ?? mm., and a female 670. 200. 112. 30 mm.

The immature male was one of two individuals encountered on the plains about 7 a.m. one morning, and shot by my native collector. It appears quite common for them to hunt in pairs, which need not necessarily be of opposite sexes, for two adult females were hunting in company on one occasion.

During July 1921, a native complained that an animal had dug into his strongly-built mud and wattle chicken-house, and taken four fowls. I set a gun-trap (.22 B.S.A.) over the entrance it had made, and the following night the gun went off, but so did the animal without leaving any trace of being hit. A few nights later it returned and took three more fowls in one night, effecting an entrance by digging in a different spot. In neither instance was a trace of the fowls left, and presumably they were carried off whole.

A lion trap was set inside the yard at the spot where it had broken through the fence, and the following morning my boy informed me that a ratel was in the trap. The poor beast had dragged the heavy trap twelve feet and torn a hole in the fence, but couldn't get the trap through. It had chewed a ground-sheet to rags as well as other things within reach, including its own foot, whose claws I recovered from its stomach after having shot it. I have known this happen in the case of another ratel, and have little doubt that in the fierceness of their rage at being caught they lose their sense of pain to some extent, else how could they mutilate themselves?

The stomach of this individual contained fowl feet, beaks, eyes, etc., and the wing of a bird. The other specimen had a little grass, probably seized after capture. A screw-worm and a tape-worm were found in the abdominal cavity.

Despite the nauseous stench of the creature, Wazigoor and Wabeni porters asked for the bodies of two rats and ate them!

ICTONYX STRIATUS ALBESCENS Heller.

A single female Zorilla (250. 152. 49. 23 mm.) was purchased from a native, who had killed it in his fowl-house at Usshora, 30. x. 21. Though very young it had minute fetuses *in utero*.

AONYX CAPENSIS HELIOS Heller.

Fisi maji, its Kiswahili name, is commonly used for the Otter by both Wakami and Wasagara.

A single female (762. 485. 132. 25 mm.) Otter was trap-shot with a .22 rifle whilst under water at Tindiga, 1. ix. 22. There were fish in its stomach and a new Ascarid (*Cleoascaris spinicollis* Baylis), and I was somewhat surprised to find a flea (*Ctenocephalus felis*) in the fur of such an amphibious creature. Ticks were also present but not preserved.

VIVERRIDÆ.

CIVETTICIS CIVETTA ORIENTALIS Matschie.

The Civet is known as Fungo in Kiswahili, Kikami, and Kisagara.

Twelve specimens from Wami River, Mkata River, Kimamba, Kilosa, and Sagayo.

The largest male measured 900. 480. 140. 60 mm. (Sagayo), and female 940. 445. 140. 60 mm. (Wami R.).

The only note on breeding is the record of two litters brought me on 21. iii. 21 and 29. xi. 21 from Kilosa. The first litter contained three and the latter two. The young are almost black.

The first batch were very fierce, spitting and biting when approached; after a month two of them showed signs of taming, and would come to me at meal times, standing up on their hind legs or clambering to my knee. They never liked being handled. Civets are very dirty feeders, and these little beasts invariably put their feet into their milk or held jam down with their paws, getting into a nice mess. They were very fond of mangoes.

Stomachs of wild specimens held the following:—(i.) Bodies of birds and rats skinned by my collectors the previous day, chicken's leg and mango skins from the kitchen. This animal was shot at 5 a.m. in bright moonlight from the verandah. (ii.) Flesh of a baboon, which I had put out as a bait, some other big pieces of flesh, skin bearing fur of what might be the gerbil (*Taterona* sp.), a locust, and a calculus of hair. (iii.) *R. c. microdon*, eggs and chicks of a francolin, fruit of mkongo tree.

On offering the body of a skinned genet to my young civets they approached it gingerly, and then the male flung himself, throat foremost, on the carcass, rubbing his throat, chest, and shoulders in the entrails in an ecstasy of delight; he was shortly joined by a female, and the two of them pushed the carcass all about the floor in their efforts to rub their throats upon it.

After a month in the house I turned these three civets loose in an empty room of a roofless German house, and as I was unable to spend much time with them they grew very fierce, though regularly and well fed. After four and a half months, therefore, I chloroformed two of the worst and let the other go. The two chloroformed, which may be assumed to be five months old, measured: Male 520 310. 97. 46 mm., weight 5½ lbs. Female 580. 350. 110. 50 mm., weight over 7 lbs. (the scale only weighed to seven). This male was always rather backward.

The liberated male had his food placed in the room and returned for it regularly for a fortnight, after which I went away. I frequently met it on the path in the moonlight, making its way to the house, and it did not flee but generally withdrew in a shadow and crouched there until I passed.

Few animals are so rich in parasites: one specimen alone had nine hippoboscid flies (*H. capensis* v. Olf.), fleas (*Ctenocephalus felis*), ticks (*Rhipicephalus simus* Koch), and nematodes (*Filaria* sp., all females, not *F. martis* Gmel.) were found in its stomach. Ticks and this species of flea were almost invariably present. Another flea (*Echidnophaga larina*) and tick (*Haemaphysalis leachi*) were found on a Sagayo civet.

Two instances of civets caught in gin-traps biting off their feet came to my notice, indeed I found what was probably the remains of one of them in a dry watercourse. The skull showed that the animal was very aged, all the molars on the right rami of the mandible were missing and the bone healed over, though it appeared to have had a bad abscess at one time.

The bodies of civets killed on one safari were eaten by my Wazigoor and Wabeni porters.

GENETTA DONGALANA NEUMANNI Matsch.

Nghanu in Chigogo, Ndele in Kinyaturn, Nilele in Kiramba; Kanididi in Kinyamwezi.

Nine specimens of Neumann's Genet were obtained at Kidenge, Itumba (skin seen), Ndogwe, Suma, Singida, Mdjengo's, Mtali's, and Izikisia. Three of these were trapped with a down-pointing .22 rifle while attempting to get at a fowl used as bait.

At Singida an adult male (490. 460. 90. 50 mm.) was brought to me alive with a string round its neck; though freshly caught it allowed itself to be stroked and was very amenable, possibly it was dazed by daylight. When annoyed it raised the fine black dorsal mane on end and bushed out its ringed tail.

At Izikisia on 15. xi. 21 two kittens were found in a hole in a

tree in open miombo bush country. The hole was some ten feet from the ground. I rather hesitate in referring these kittens to this race as no adults were collected in the locality.

A rat (*R. c. microdon*) was found in the stomach of the Ndogwe genet. These genets cause a great deal of mischief among native fowls, which they appear to kill for killing's sake when they can get into a fowl-house.

GENETTA SUAHELICA Matsch.

Kanu in Kiswahili, Kikami, and Kisagara, Tondolega in Wabehe.

Thirteen specimens from Mkata River, Rudewa, Kimamba, Kilosa, Mbonoa, and Mdjengo's.

The largest male measured 500. 440. 89. 45 mm., and best female 525. 435. 87. 48 mm.

Two very young kittens ($\sigma \sigma$. 190. 165. 40. 25 mm.) were brought to me at Kilosa on 7. v. 21, but only lived till 20. v. 21. Another, only a few days old, on 28. iii. 21, thrrove for a month, but during my absence from home was allowed into a room where there was a freshly-cured leopard skin on which it went to sleep. It afterwards apparently licked the skin, for I found traces of arsenic in its stomach, and it died with all the symptoms of arsenical poisoning on 27. iv. 21.

It was suffering from constipation when brought to me and on the second day extruded its bowels, which I washed with warm water and permanganate, lubricated with vaseline, and returned. I gave it doses of salts at 2 and 6 p.m., and it obviously recovered as it lived for a month after and was always very full of life.

I first fed it on sweetened milk and jam; after nine days I gave up feeding it, and it lapped milk and it attempted scraps of meat. It very soon gave up spitting when handled, and showed no fear of a mungoose or three young civets, ever so much larger than itself. It spent a great deal of time in sleeping, varied by climbing, at which it was an adept. It clambered up the mosquito gauze to the top of a door and then called to be helped down; backs of chairs were a very favourite goal, which when reached it would rest upon.

When sitting up in trees at night it is a common occurrence to hear genets hunting through the grass, pouncing here and there, or clambering into a bush, from whence birds would go off with a twitter or a whirr according to kind. I waited for one such for half-an-hour before it appeared in the road. After one or two short runs it then vanished, but presently reappeared, and seeing the goat beneath my tree dashed towards it, but on the far side, where it halted for a second to look at the goat, and I shot it dead.

In its stomach were grasshoppers, a large black field cricket, and beetle elytra, together with not a little green stuff, mostly grass-blades as far as one could determine. A second individual

had eaten a gerbil (*T. swaythlingi*) and a rat (*R. c. microdon*). In the stomach of another was the tail of a rat, the unidentifiable foot of a small bird, the body and limbs of a frog (*Rana* sp.), and many kinds of insects much chewed. Yet another held a single rat (*R. c. microdon*).

Three species of flea were taken from three individuals (viz., *Echidnopsis gallinaceus*, *Chimacropsylla potis*, and *Ctenocephalus felis*). Ticks (*Haemaphysalis leachi*) were found on three genets, and nematodes (*Ascaris* sp., females) were also taken.

GENETTA STUHLMANNI STUHLMANNI Matsch.

Nilili in Kisukuma.

A single immature male (240. 230. 80. 33 mm.) twelve feet up in a bush on the banks of the Simiyu River at Sagayo in mid-morning. Fleas (*Ctenocephalus felis*) and ticks (*Haemaphysalis leachi* var.) in its fur, and ascarids came wriggling from its mouth just after death. These worms were all females and not referable to *Belascaris*, but may indicate a new species (Spanl). Adult genets were seen in the neighbourhood of kopjes on two occasions.

HERPESTES (CALOGALE) FLAVIVENTRIS Matsch.

On three occasions examples of this Mongoose were seen hunting in daylight on kopjes at Sagayo; they reminded one strongly of ferrets in the way they explored crevices and reappeared in unexpected openings.

♂. 350. 280. 52. 20 mm. ♀. 332. 260. 25. 15 mm. The male had eaten a rat (*R. c. microdon*); the female, which was gin-trapped among the rocks, is in the Game Dept. collection.

HERPESTES (CALOGALE) GRANTI Gray.

A female from Usshora had been killed by a native in his fowl-house. I saw one of these mongoose in association with *H. g. lademanni* Mats. in a ravine at Mbulu's, another day a pair were hunting together over a rocky kopje. What I took to be a male had a black tail-tuft, not ochraceous as in the female.

♀. 350. 290. 60. 20 mm. It had three fleas (*Ctenocephalus felis*) in its fur.

HERPESTES (CALOGALE) MELANURUS RUFESCENS Lorenz.

A male killed at Zanzibar on 12. viii. 16 was presented to the writer by Dr. Aders, F.Z.S.

HERPESTES (CALOGALE) GRACILIS LADEMANNI Matsch.

Known as Kiniboo in Kinyaturu, and Chonja (?) in Kisukuma.

A single male (350. 280. 60. 30 mm.) from Mbulu's was driven by my collector out of a ravine between kopjes in thorn-bush steppe. Two were seen on different occasions at Mtali's and yet

another at Mkalama, but they are very active and vanish from sight amongst the boulders of the kopjes which they frequent.

The male's stomach contained a lizard (*N. emini*), a skink (*Mabuia* sp.), a chameleon (*C. parvilobus*), and grasshoppers. There were also some indeterminate nematode parasites. Six fleas from the fur were identified as *Ctenocephalus felis*.

HERPESTES (CALOGALE) GRACILIS IBELE Wroughton.

A female was collected at Ngong Forest, Nairobi, 2. x. 20.

HERPESTES ICHNEUMON FUNESTUS (Osg.).

Four from Kilosa. Two were purchased from natives who had killed them in their fowl-houses. A skin was also seen at Mkalama.

One male (532. 532. 100. 37 mm.) was very lean, but its fur was in good condition, some of the black hairs in the terminal tail-tuft were six inches long. There was rat's fur in its stomach.

There were many parasites on this one individual. Lice (*Trichodectes rammei* Stebbe) swarmed in thousands. Of nineteen fleas captured two were *Echidnopsis gallinaceus* and the remainder *Ctenocephalus felis*. Nematodes from the liver and intestines were *Physaloptera* sp. indet.

ATILAX PALUDINOSUS RUBESCENS Holl.

Karasa in Kikami.

Six specimens of the Water-Mongoose from Bagilo, Tindiga, and Kilosa.

The largest male measured 530. 350. 105. 35 mm. Largest female 530. 330. 100. 31 mm.

The latter, taken at Tindiga, held two fetuses measuring 104. 52. 21. 5 mm., and both together weighed 3 oz. (27. viii. 21).

One was shot at 8 p.m. in bright moonlight as it approached a dead monkey I had left on the path, a second appeared shortly afterwards.

One specimen swarmed with lice (*Trichodectes acutirostris* Stebbe, *T. mungos* Stebbe, *T. ?rammei* Stebbe), a tick (*Rhipicephalus simus* Koch), and had filarid worms beneath the skin. In the stomach of another was an ascarid (*Cleoascaris spinicollis*, gen. et sp. n. Baylis).

ICHNEUMIA ALBICAUDA IBEANA Thos.

Kanhanga in Kikami, Mbaku in Kisagara.

Six specimens of the White-tailed Mongoose from Tindiga, Ilonga, Kilosa, and Nairobi.

The largest female measured 600. 455. 132. 38 mm. An immature female (440. 350. 100. 38 mm.) was disturbed in the burning of rubbish and run down by a native, from whom I

purchased it. It is very dark in colour and the white hairs of the tail are concealed by longer blackish ones, so that it presents a very different appearance from the typical white-tailed individuals.

A female killed at Tindiga on 10. ii. 21 had two foetuses, those on 18 and 24. viii. 21 none.

On 1. i. 23 I was given a young male by Capt. Turnley, at which time its coat was grey and very woolly, but long black hairs were showing thickly on the nape and fore-parts.

It liked being picked up and petted and would lie on its back in one's arms most contentedly. When very pleased it licked one after the manner of a cat. One's nose seemed to be a cause of offence, for if lying on a sofa or in any position where it could be reached, the mongoose would attack it fiercely. With this exception, it never attempted to bite except in play.

It enjoyed a game—usually started them in fact. One favourite pastime—after having located a safe retreat under a cupboard or other piece of furniture—was to steal forth with the greatest caution, then, feigning alarm, to scuttle and scramble back with much noise. After repeating this performance several times in the hope that you will chase it back, which it considers great sport, and failing to attract your attention, it will approach very silently and bite your heel or give you a pat with its claws and then tear madly back to its retreat. If you still refuse to come and play, it attacks your shoe-laces and 'rags' them with great abandon.

It showed great alarm of sudden noises, and the hairs of its white tail immediately stand on end as does its back fur to some extent; it spits most explosively. It has a wonderful variety of sounds at its command, one of contentment is almost indistinguishable from that made by the young Blue Monkey, and is something like 'urrr.'

After I had had it two months I went on safari, and almost the first night it was turned loose in the tent it was scared by the sudden entrance of a native and ran out into the bush, never to return.

It showed great fondness for the pupæ of moths and wasps, and broke open the mud nests of the latter with its strong claws, but never in my experience touched the grubs. It often rejected the bread in its bread and milk, but liked sweetened condensed milk and eggs. Chicken bones would be picked clean and greatly appreciated. Rice, mashed potatoes, and porridge were taken readily.

The stomachs of the wild adults collected contained the following:—(i.) Grass, leaves, termites. This individual was trapped whilst attempting to enter a fowl-house. (ii.) Remains of fowl, crickets, paupau skin. (iii.) Grasshoppers. (iv.) Termites.

Fleas (*Ctenocephalus felis*) and ticks were found in the fur, and cestodes (*Spharynum* sp.) between skin and flesh. Two individuals had numerous screw-worms in viscera.

HELOGALE UNDULATA UNDULATA Peters.

The Lesser Mongoose is known as Kingalla in Kisagara, Muloli in Chigogo, Minyirsira in Kinyaturu.

Five specimens collected at Kipera, Mpanira-kwa-Sagoi, and Mbulu's. It was also clearly seen near Mkata River, Pooma.

The species is diurnal and very definitely associated in my mind with the termite hills, to which the little hunting parties scamper when disturbed. Before disappearing down the holes they usually sit up, with fore-paws drooping on their stomachs, and take one more look at the cause of their fright. One was shot on a sloping tree-trunk.

Largest male measured 240. 175. 45. 17 mm., and female 230. 170. 45. 19 mm.

HELOGALE VICTORINA Thos.

Kamsio in Kinyamwezi, Lonzi in Kiramba, and Kijinolo in Kisukuma.

Eleven specimens from Mdjengo's, Sanga, and Sagayo. It was also seen at Mlewa's, Mtali's, Mkalama, Usurwe, and Shanwa.

Largest male 260. 160. 43. 20 mm., female 245. 157. 45. 18 mm. Young of latter in nest 80. 40. 15. 4 mm.

One individual held two fetuses only (Sanga. 16.x.22). A slight nest of grass (native collector's statement) was found in excavating a termite heap, where the female was found with four almost naked young. She and her family were transferred to a box, but though eating heartily herself, she refused to feed them so that they died (Sagayo, I. xi. 22).

Stomachs contained finely masticated insect remains, which appeared to be chiefly those of grasshoppers.

MUNGOS MUNGO COLONUS (Heller).

The Banded Mongoose is known as Ngutchiro in Kiswahili, but the Wa-swahili use this name for all other species of mongoose which they may encounter and many of which are quite unknown at the coast. The Wasagara appear to have no other name than Ngutchiro for it. Tukwa in Kikami, Nghalasanga in Chigogo, Kala in Kinyaturu, Kala in Kiramba, Ikala in Kinyamwezi, Nhala in Kisukuma.

Five specimens collected at Dodoma, Pooma, Mdjengo's, and Usshora. It is, however, a very widely distributed species and was also seen at Mlewa's, Mtali's, Usurwe, Mkalama, Shanwa, Sagayo, and all along the road from Ulugu to Tabora. Curiously enough, I have never seen it at Kilosa during the two years spent there, though a company of mongoose crossed a path one afternoon, but at too great a distance for me to be sure they were not Atilax (which usually goes singly or in pairs), or some other large species.

Largest male measured 390. 240. 78. 25 mm., and female 395. 280. 82. 20 mm.

At Pooma I saw ten of these mungoose sitting erect on a termite hill, intently watching a flock of guinea-fowl which were feeding towards them across the open, the nearest being only twenty feet away. I was able to approach and shoot two mungoose sitting close together, but one fell down the hole. The other I found was a very light sandy, or straw colour, excellently adapted to life in the thorn-bush steppe. On showing it to my collector, he said that this variety was well known and that probably all in the thorn-bush country would be of a similar shade. Unfortunately for this theory, its dead companion was dug out of the hole and was the typical nut-brown shade, as were all the others subsequently seen at close quarters in the thorn-bush steppe.

Just on the outskirts of Tabora, about twenty feet from the mainroad along which a noisy stream of natives were passing, eight mungoose were seen sunning themselves in all manner of indolent attitudes about 7 a.m. They took not the slightest notice of my porters, who had dropped their loads, and were moving about within fifty feet of the bold little beasts.

An amphispænid (*G. modestus*) and two skinks (*Lygosoma* sp.) were found in the stomach of an Usshora specimen; a grasshopper, large carabid, and beetle larvæ in another.

Fleas (*Echidnophaga gallinaceus*) were taken in the fur of one, whilst screw-worms were found in the viscera of another. The Banded Mungoose is killed by the Wanyaturu for food.

PROTELEIDÆ.

PROTELES CRISTATUS TERMES Heller.

I have not been fortunate enough to obtain a specimen of the Aard-wolf, but the creature being so rare in Tanganyika Territory it seems worth recording every occurrence. I have only seen two skins, one obtained near Itumbi in Manyoni District, the other, which is in the Game Dept. Museum, was obtained by Mrs. Billinge at Kiganga on the Ruaha, 31. viii. 22.

It was caught in a lion gin set on a path and was a full-grown male, measuring 30 inches from nose-tip to base of tail, the latter being another 10 inches according to Mrs. Billinge's measurements. She estimated the weight as about 20 lbs.

HYÆNIDÆ.

HYÆNA HYÆNA SCHILLINGSI Matsch.

Two examples of Schillings' Striped Hyæna were obtained at Gulwe and Mtali's. Both were males, of which the larger measured 1190. 290. 200. 153 mm.

In the stomach of the younger specimen were the remains of a

monkey skinned in camp that day, a great quantity of mealies, and some wild yellow fruit which might have been in the stomach of the monkey. There were also a lot of vertebræ of a good-sized python and the skin of an agama lizard.

A Hippoboscid fly (*H. capensis* v. Olf.) was in its coat and also two species of ticks.

CROCUTA CROCUTA GERMINANS Matsch.

Three specimens of the Eastern Spotted Hyæna were collected, others were also examined from the following localities:—Kilosa, Mtali's, Izikisia, Simbo, Shandwa, and Mwdira.

The Kiswahili name of Fisi seems to be universally employed, in Chigogo it is altered to Mvisi, and in Kisungwa it is called Fifi.

The largest male measured 1350. 250. 215. 110 mm., the largest female 1245. 241. 215. 101 mm.

The latter held a single foetus very near the birth, weighing 3¼ lbs. and measuring 330. 70. 60. 29 mm.

One which I shot at a waterhole at 1.30 a.m. had come to drink earlier in the evening, and a movement of mine in the hide-up had caused it to bolt. It returned with three zebra at its heels, and tried to get past a flanking zebra without coming too near my hide-up, which it was quite aware was tenanted. It was in abject terror, trying to crouch past with stomach close to the ground, when I shot it at fifty yards.

The contents of its stomach and others were as follows:—(i.) Goat's skin, hoof and ox bones, broken fragments of a gourd picked up near a native hut presumably. (ii.) Goat or small buck's hoof, giraffe bones and strips of giraffe skin, pared off by a sandal-maker, fowl's feet, bits of gourd. (iii.) Remains of goat and ox, wild pig, duiker, rat's foot, fowl's feet, and two hairy calculi.

Three fleas from the last-named specimen proved to be *Ctenocephalus felis* and *Echidnophaga larina*. Hippoboscid flies (*H. capensis* v. Olf.) were found on two specimens, also ticks (*Rhipicephalus simus* Koch).

FELIDÆ.

ACINONYX JUBATUS RAINEYI Heller.

Duma in Kikami and Chigogo. Pocho (?) in Kisagara (Pocho appears to be applied to the Hunting Dog and there may be some confusion). The Cheetah is not a common animal in Tanganyika Territory as it is in Kenya so far as my experience goes. The natives are unfamiliar with it and few seem to know its name, usually confusing it with either the Leopard or the Serval!

The only local skin I have seen was of quite a large animal, which was brought for sale by two natives, who said they had found it dead near Kideti (viii. 22); having been killed by a snake.

which, after an examination of the skin, I think very probable; most likely a puff-adder.

The Wanyinwezi, Wanyiramba, and Warangi have a saying that the witch doctors give a potion to the cheetah which endues it with sufficient courage and fierceness, and causes it to rush off into the bush, where it lies in wait for children and even adults whom the witch-doctor wishes to be rid of: the creature pounces upon them, lacerates them, and laps the blood, but does not eat the flesh, and presently leaves the body.

FELIS LEO MASSAICA Neum.

One specimen collected at Kilosa. Many others seen; the distribution is so widespread in Tanganyika Territory that it would serve no useful purpose to give localities.

Manes as a guide to subspecies? Some lions broke into a hut 300 yards from Kilosa Boma on 4. ii. 22 and killed four goats: traps baited with dead goats were set the following night and one lion was killed; the other, wounded in the nose, is the "specimen" referred to above. This individual had a fine dark mane, and was a full-grown male in its prime with splendid undamaged teeth. The other was a very old male, maneless, with worn and broken teeth, very ill-nourished, and with the spotting usually associated with youth or females, very noticeable.

Do lions climb trees? At Kipera on 26. xii. 22, I was coming through a lot of rank sedge almost shoulder-high when I saw a fine waterbuck on a slight eminence some two hundred yards away. I fired, and the bullet struck a tree close behind him and just below his head. I fired again, and he went down with a roar. At the same moment a lioness sprang from a tree and bounded away in full view to a thicket. My boys, who were some little distance behind me, said that at the first shot they saw the lioness put her head out of the foliage and peer about, and they supposed I was firing at her, but with my attention rivetted on the buck I never saw her till she sprang from the tree. An examination showed her claw marks, and I think she was at a height of 12 feet from the ground and about 10 feet from the buck, upon which she was doubtless just about to spring. The tree was not quite vertical, and the part she was sitting on was almost horizontal.

It is often said that only old toothless or injured lions turn man-eaters! The following incident is a good commentary. A native woman at Tindiga, a few miles from Kilosa, venturing outside her hut 8. ii. 21, was sprung upon by a lion and eaten in the mealies scarcely 50 feet from the hut. On 11. ii. they visited a cattle boma and paraded round and round it. On 12. ii. they squatted one on each side of a jumbé's door, as was evidenced by their spoor; they then went off and pounced for a man's foot through a reed wall: the occupants scared them off by making a noise. On 13. ii. one of them tore out a bundle of grass from

the side of a hut in an effort to reach the occupants, who also scared them off with an outcry. On 15.ii.21 we heard their persistence had been rewarded, for they killed a man at Kivungu and ate him except for the head. They appeared to be changing their beat and making towards Myombo, where they mauled a man a fortnight ago who was rescued by his friends.

A scout had been sent to Kivungu to set traps and was in a hut, when the door was burst open by a lion: a woman was sleeping close to the door. He ran outside and saw the lion standing not twenty feet from him, but could not fire as it was in line with another hut. On 17.ii. they broke into another hut at Kivungu, five hundred yards from the one forced the night before. The only occupants were a woman and child, and she scrambled to the flimsy reed shelf above the door and screamed. She told me that the lion stood in the doorway but was afraid to enter. The neighbours then beat tins and lit torches, so that she was able to run across to an adjacent hut. When they had gone to sleep and all was quiet the lions returned, dragged out the bed to the edge of the clearing sixty feet away and ate the plaited cords, which doubtless reeked of human beings, and smashed up the framework, which I myself saw early the following morning.

On 18.ii. they broke into a hut between Kivungu and Myombo and dragged out a basket of beans and ate the basket; they then crossed some five miles of country to Tindiga, broke into a hut there, and nearly got a man. On 19.ii. one of them entered a hut before it was dark—they were obviously hungry—it was frightened off and a trap set, which caused its death at dusk when it returned. Its companion entered a second trap a few hours later, and the man-hunting automatically ceased.

I measured these lions carefully and independently, and found them exactly alike with the possible exception of a half-inch difference in the length of ears. Both were tawny, maneless males in well-nourished condition, presumably brothers of the same litter. The one had the remains of a wild-pig and some grass in its stomach; the other had nothing but some parasitic worms. Length of head and body, 67 inches. Tail 31 inches.

Another instance of man-killing occurred on the night 8-9. v. 21, when a lioness appeared to have become desperate from hunger. The circumstances as I reconstructed them from the spoor and native statements were thus:—The lioness first appeared (unseen), in some rank grass outside a native kraal, where it crouched, wriggled about, and watched a large party sitting around a fire inside the stockade. She then rose up and, with a "woof, woof," trotted through the doorway and seized a youth of fourteen by the thigh, and started back for the doorway. The jumbe, who was a very old man and decrepit, pursued the lioness, striking her with his bare hand on her quarters as she made for the doorway—the compound was an unusually large one. When she reached it the body stuck crosswise, and after a couple of attempts and with the persistent old man still spanking her, she dropped

it, sprang over it and made off. The boy was quite dead. I could see very few marks on the body except where she had carried him in her jaws.

She then crossed the piece of waste land and came out on a path where she clawed up the ground considerably, presumably to clean her claws, or in a fit of annoyance. She followed the path for half-a-mile, then cut across another fifty yards of rank weeds, and came to the edge of a little clearing where a woman was sitting under the eaves of her hut shelling maize into a dish; her baby was slung on her back. Again the lioness lay down, to take her bearings I suppose, then sprang upon the woman, whom she carried off to beneath a tree fifty yards away. The woman screamed, and beat the lioness about the face with her bare hands; neighbours seized firebrands, tins, etc. with which to make a noise, and sallied forth. They caught sight of the lioness crouching over the woman beneath the tree, where it had, without doubt, taken her to eat; at the sight of the rescue party the lioness bolted. This was about 7.30 p.m. The baby was unhurt, the mother horribly mauled.

The animal next made for Kilosa, and on reaching the village of Mkwatani broke into a hut where two women lived together. It smashed down the door, which was only made of matama stalks, dragged the body ten feet from the door and ate half of it. There were six other huts within a hundred yards, and when the neighbours rose next morning they caught sight of the lioness crouching over her prey, she also saw them and cleared. A messenger brought me the news soon after daybreak, and I sent him back with instructions on no account to move the body. I set off on my cycle, and when close to Mkwatani another native met me with the information that the lioness had returned in bright sunshine at 8 a.m. and carried the body off into the matama. I followed the trail (which was well marked with various items such as a bit of gory rag, some toes, bits of fat and the like) for a hundred yards, when the matama became so thick one could not see ten feet away, and had perforce to make considerable noise in forcing our way through it, so we returned—the boys to make traps, while I went on to investigate the other “kills” already referred to. At 5 p.m. an askari on his own initiative wormed his way up to the lioness as she was feeding under a mango tree, and riddled her with bullets from a few feet away.

A Hippoboscid (*H. capensis*, v. Olf.) was taken on one specimen.

With Lions at their Kill.

One morning, in October '21, I was sitting some fifty yards from a water-hole, when I noticed a little group of animals wending their way through the thorn-bush towards the water, from which they were still a hundred and fifty yards. At the first glance I thought that they were a little group of buck, but a second later

saw that the leader was a maned lion, followed by another full-grown and four nearly full-grown cubs. At the first shot these made off, but concluding that they must come to water some time, I had a little stockade—perhaps ten feet long by five feet wide—constructed between two small trees about fifty yards from the water. At 4 p.m. in the afternoon I took up residence in this little cage and awaited events.

All was very peaceful except for some fifty or more doves assembled around the water-hole; at intervals of ten minutes these took fright and with much clatter flew to the surrounding trees, but soon returned to the waterside. A large flock of guinea-fowl fed up to within fifteen feet of our hiding place. Little else occurred to break the monotony of our wait until 6 p.m.: three fine eland, but with very average horns, emerged from the thorn-bush scrub and came within fifteen to thirty feet of the hide-up, the nearest was certainly not more than fifteen feet away. The boy had set two gin-traps by the water's edge and had been told to remove the pins, which he said had been done: fearful lest the antelope should get caught in these, I scrambled up the palisade (some nine feet in height), shouted, shoo'd, growled and wildly waved my arms in an effort to scare them away. The stupid creatures stood stock still for fully two minutes before wheeling and cantering off.

From 7 to 9 p.m. I slept a good deal, though constantly aware of the presence of hoofed animals in the vicinity: these approached the water with great caution and then stampeded, individuals passing within a few feet of our stockade on several occasions. I imagine it was shortly after 9 o'clock (the boy had mislaid the matches, so we could not have a light, even had we desired one) that I suddenly became wide awake with a strong sense of something wrong. A lion was padding round the stockade and snuffling at times; he was within five feet of me, but vainly I sought to pierce the darkness to get a shot. The footsteps would cease, but at what angle to fire I could not decide, and I was above all anxious not to leave a legacy of a wounded lion behind for the local natives, twelve of whom had been carried off by lions in this district in the preceding month. These deaths had occurred for the most part along one stretch of road about twenty miles in length in broad daylight, so that the road was now taboo.

Gradually I realised that more than one lion was paying us attention, as heavy breathing could be plainly heard at several different points, and at times it seemed that some were lying down whilst their companion tried to scare us out. The smell of them was very strong in my nostrils; my companion, who had wept himself to sleep at the prospect of an awful end, still slumbered peacefully. With startling suddenness a loud grunt was given perhaps twenty feet away, it was followed immediately by a noise of animals rushing straight towards us. I waked the boy just as I was able to distinguish the hammer of hoofs, and a herd

of eland came sweeping down the hillside through the thorn-bush in a most reckless manner. The lions lying on either side of us, however, rose up and headed the mob with grunts, so that they wheeled at exactly twenty feet from our hide-up and swept on with the magnificent abandon of a cavalry charge.

Confused noises about a hundred yards further on followed by a roar (such as I have heard a felled bullock in a slaughter-house give), announced that an eland had been downed by other lions lying in wait, whilst the remainder of the herd crashed away through the scrub. Right on the heels of the herd as they passed us came at least three lions, whose easy swinging gallop sent a shiver down my spine; they passed so close that we could hear them panting, and on reaching the kill they made a variety of noises, mostly grunts of satisfaction. Then one gave two roars, which were answered by lions grunting all up the valley.

I was greatly impressed by the splendid organization of the drive—lions posted all along the valley to head the herd off. The final coup from the signal grunt to the roar of the beast, which had been sprung upon us, was scarce a minute, I should imagine, and took place with such a startling suddenness after the former silence that it rather put one's nerves on edge. They soon began rending and feeding upon the carcass in a very amicable way to the accompaniment of many small sounds, which made me think that they were really a great deal nearer than was the case, for daylight revealed the kill between a hundred and a hundred and fifty yards off, so that I concluded the animal must have carried its lion for the best part of fifty yards after it was sprung upon—and what a beast it was! A fine female eland, with horns $27\frac{5}{8}$ inches long (front-edge measurement), heavy in calf, which must have been very near birth to judge by its hoofs, which were all that remained of it. All the meat excepting the head and legs had been eaten, the legs being still attached to the skin with some of the backbone and broken basal portions of the ribs.

To return to the lions, however. Following the roars and their replying grunts, came the lions themselves in ones and twos, grunting all along the way, and many of them passing close to my place of concealment. Though a gentle rain was now falling they presumably smelt me, for several would pause for a moment before padding on to join their comrades at the kill. What astonished me was their good behaviour, an almost entire absence of growling and snarling, merely the munching, lapping and tearing of food, and the small grunts of satisfaction already alluded to. About an hour later—so it seemed to me, but I may have been wrong—a party went down to the water, which was only fifty yards away, and the sound of lapping was very loud; then some individual found the traps (these were set but the pins not removed), which they growled at and dragged about, together with the heavy tree-trunk to which they were chained, in the most astonishing

way. On hearing the continuous rattling of the chains and the growling, we congratulated ourselves on having got one lion at least.

They presently returned to the kill to discuss dessert, and discuss it they certainly did, growling, grunting and snarling as they crunched the bones, which they would drag away and eat by themselves: some walked about and grunted. This disconcerting commotion continued till a couple of hours before dawn: there was one interruption when two lions came along the ridge forming our side of the valley and gave a peculiar sing-song call that I have never heard from a lion before, and strongly reminded me of the cry of a hunting-dog; this was answered by a lion at the kill, which left the kill and walking past us, calling the whole time, joined the others on the ridge above, when they all went off in the direction taken by the mob of eland. I imagine the peculiar cry of the lions was a call to come and join another hunt. Not long after this a lion came back to us and pattered round, lay down and breathed hard. Though we were having occasional flashes of lightning and a good deal of thunder the darkness was absolutely impenetrable, and while listening for further movements on the part of our visitor, I fell asleep.

When I awoke dawn was breaking, but still the light was too poor to see a rifle sight. I jumped up, and crept silently to the side of the stockade nearest the kill. For a moment I saw nothing, then in the grey light I made out a lioness standing with her whole flank exposed not fifty yards away, she was looking towards the water. I turned round and whispered to the boy to hand me the rifle, our quarters being somewhat cramped: in doing so, he made some small sound which caused the lioness to spring round facing me and growl, at the same moment a very small cub came racing up from the water's edge, and the pair of them trotted off immediately and obliquely. I had scarcely time to thrust the muzzle of the rifle through the fence and take a hurried shot after them, before they were lost to sight in the maze of thorn-bush. The boy scrambled up the tree which formed one end of the stockade, and said that he could see a big maned lion making off from the kill, which was hidden from our view by intervening thorn-bush; he was already a long way off, being doubtless startled by the shot. So, after all, we returned to camp empty-handed, but not regretting a very interesting experience.

FELIS PARDUS SUAHELICA Neum.

Two specimens gun-trapped with .22 at Kilosa. Like the last, the Leopard has such a wide distribution in Tanganyika that to record localities seems but a waste of time.

Native names seem to be generally derived from the Kiswahili Chui; in Kinyaturu, Mui; in Kisukuma, Sui; in Kikami, Duma; in Chigogo, Suwi.

Both the above-mentioned specimens were immature—viz.,

male 462. 436. 82. 44 mm. and female 1092. 737. 229. 77 mm. A larger male measured 1240. 660. 240. 73 mm., and female 1141. 659. 215. 76 mm.

The latter, being also a comparatively young animal, had only two fetuses (Kilosa, 20. ix. 22), of which the male weighed $\frac{5}{8}$ pound and measured 217. 110. 42. 10 mm., and the female 206. 107. 39. 10 mm. The coloration and spotting most distinct in front of ears, where hair was quite well developed, spotting (no coloration) distinct all round area between front and hind limbs, both belly and back, also on tail. No spotting on fore-limbs, and only on the outer basal portion of hind-limbs.

At Kilosa the staple food of the leopards would appear to be baboons. Mrs. Turnley was fortunate enough to see a leopard carry off a baboon at 3 p.m., only 200 yards from her house. The baboons mobbed the leopard, which made off towards the hills. By day, however, the baboons are generally masters of the situation. On one occasion, a native reported baboons mobbing a leopard within a quarter-of-a-mile of the house, and on arriving at the place I saw the leopard was 60 feet up a tree. I had two shots but missed, the second striking the limb on which the leopard was crouched among the foliage.

Another time I had sent out two collectors in the morning, when one returned reasonably excited to say that they had heard a great outcry of baboons on the opposite slope of a small rocky ravine, and on going nearer to see what the uproar was about, they saw four old baboons surrounding a leopard and striking at it with their hands; as surely as the leopard turned on one he would be fiercely attacked by those behind, so that he was very much at a loss to know what to do and sought refuge beneath a bush. The one boy had remained to watch the proceedings whilst the other brought the news.

We hastened to the spot, which was fully half-an-hour distant, only to find that there was no boy or baboons there. My companion was inclined to think that they were romancing, but having come so far, he crossed the ravine or donga lower down and went to the place where the alleged fight had taken place, I remained on the near side. He called out that the spoor spoke for the truth of the boy's statement, and easily traced the leopard from the bush to the donga, on the edge of which the baboons had collected and torn up the turf in their fear, wrath, and excitement. My companion said it was obvious that the fight had gone on, as the baboons would not have left the leopard in the donga, but just to make sure, he ordered the boys to throw in a shower of stones. The next minute I called out something, and there was an angry snarl in the bushes on the edge of the donga not ten feet from me, and the grass swayed. The leopard, disturbed by the noise on the far side and the shower of stones, had been coming up when my calling out had turned it. We beat down the grass and found its spoor on the spot where the grass had been set in motion. The donga we subjected to a very

thorough search, but owing to the amount of cover the animal got away.

Dogs would seem to be the next favourite article of diet, one was taken off the verandah of a house near mine. At 5 a.m. one morning I was awakened by a very horrid noise, rather like cats quarrelling, but dying away in a moan followed by several other moans. It was only sixty feet from the house, and I ran out with a lantern, but could see nothing.

My neighbour's dog, a biggish animal, was in the habit of coming to this spot on my path to relieve itself every morning, and the leopard had no doubt become aware of this. My boy took up the spoor and traced it for two hundred yards into the rubber plantation, where he found the dog with only one haunch eaten. Mr. C. F. M. Swynnerton sat up by this and saw the leopard as it returned at dusk, but the leopard seeing him also made off before he had time to fire.

Goats make a very effective bait for leopard traps, but on one occasion, the setting of the string being too slack, a leopard was shot dead just as its jaws closed into the goat's skull so that they both died simultaneously, the leopard not even opening its jaws which had penetrated to the brain. Remains of goats were found in the stomachs of several leopards.

Bushbuck are often killed by them; in the case of one old male killed in a donga (21. xii. 20), it could be plainly seen that the leopard had sprung on its back and clawed its throat. It only ate from the haunches, but the next night returned, dragged the body twelve feet away, and made another meal from it. On another occasion a gin was set on a path much frequented by leopards; a female bushbuck was caught in the gin, and the leopard killed and ate part of her. A native going to examine the gin in the morning brought the remains of the bushbuck back to eat himself, but was made to return it. The leopard returned, adroitly avoided both gins which had been reset, and dragged the carcass half-a-mile away up a donga. The boy took up the spoor in pouring rain and came on the leopard, which gave a snarl and made off.

On the Wembere plains I came on two instances where leopards or a leopard had killed impalla; in one case a male, and in the other a female. At Kipera, between 5-11. ix. 22, leopards killed a male reedbuck, a calf eland, and a Lichtenstein's hartebeest in calf, a few days later another reedbuck. In the case of the hartebeest it might have been the work of lions.

At times they will tackle porcupines. An almost full-grown leopard entered a hut at Tindiga, where it was shot by a native, who brought it to me in the flesh. It was in a most frightful condition, covered with sores, from one of which I recovered a broken portion of a porcupine quill. On its neck was a bare patch a foot in length and two inches broad in its widest part; the patch was hard dried skin and may have been made by the leopard clawing at some quill-stumps left in the skin.

This was the second leopard in a hut at Kilosa during the week, for a native awaking to hear something moving about in his hut, jumped up and got a cuff from a leopard as it made off. It had doubtless entered in search of fowls. Two days later, on the same Otto Estate, another man heard something in a bush near his hut, and calling some friends began poking about, with the result that a leopard sprang on him, clawed his shoulders and breast quite unpleasantly, and made off as suddenly as it arrived. I imagine that the man anticipated a bushbuck and surrounded the bush with his friends, so that the leopard acted in self-defence and the man got more than he bargained for.

Unless cornered, or wounded, it is unusual for Tanganyika leopards to molest people. When at Mdjengo's (7. x. 22), the jumbe came to me and said that a leopard, which had been carrying off a lot of fowls of late, had the night before sprung on a sleeping child just inside the door of a hut. The animal dropped the youngster almost immediately an outcry was raised; it seems possible he mistook it for a goat, though I heard of another well-authenticated case where the family were sleeping outside the hut on account of mosquitoes, and a leopard carried off and ate a child. In both instances, the leopards were killed by Game Department Trappers. At Kisanga, in Kilosa District (ii. 22), I heard of a woman who was working in the fields being sprung on by a leopard and so badly mauled that she died shortly afterwards: the leopard was killed by a man who came to her rescue.

Parasites taken from the one young leopard included a fly (*Hippobosca capensis* v. Olf.), fleas (*Ctenocephalus felis*), two species of ticks (*Hæmaphysalis leachi* and *Rhipicephalus simus* Koch), and worms (*Physaloptera præputialis* v. Linst.). The second leopard had nematodes (*Onchocerca* sp. females) in its neck.

FELIS CAPENSIS HINDEI Wrought.

Kizongoduma in Kikami and Kipogoro, Kijongo in Kisagara and Kiswahili, Nzuli in Chigogo, and Nduri in Kiramba.

Four specimens examined from Tindiga, Kilosa, and Sagayo. The largest male measured 900. 360. 158. 80 mm., and female 670. 260. 170. 77 mm.

At Kilosa on 12. vii. 21 some natives cutting grass disturbed a serval, which bolted up a tree leaving a large kitten at the foot of the tree. This was brought to me and commenced to take milk at once, first from a spoon, and then going to a saucer of its own accord. It spat and clawed a good deal when approached, but seeing that it had been dragged along with a cord round its neck, it is not to be wondered at. A month later, however, it was still implacable, rolling on its back clawing, spitting and biting, so I chloroformed it.

One male was trap-shot through the spine with .22 when

attempting to reach the bait of hyrax meat only a hundred feet from my tent. I got up at 4 a.m. without having heard the shot and sent a boy to remove the gun, giving him a lamp. He found the gun had gone off, and stooping over the ground followed the spoor, when (he said) an animal menaced him just as he caught sight of its wounded mate—the lamp chose this moment to go out! He cried out, and came running back very frightened under the impression that there were two leopards. I then went and shot it through the head, it having dragged itself some fifteen feet from the trap.

Its stomach contents consisted of a great many house-rats (*R. r. alexandrinus*), and the remains of a skink (*L. ferrandi*). My captive serval showed a marked preference for chicken meat, though it would take vegetables at times. The stomach of another wild serval held nothing but grass, possibly seized after it had been trapped, as it was gin-trapped. Another was killed entering a gun-trap baited with a live goat; yet another was transfixed by a native's spear as it was eating the native's fowl—it was in very lean condition, which may account for its hunting fowls in daylight at 5 p.m.

I encountered a serval at Chanzuru at mid-day on one occasion, the sun being at full strength at the time. The animal was in the road, which was hedged in by aloes so that it could not easily escape, and I chased it for some way on my cycle. Serval were several times disturbed in long grass country, but they are very active and get away almost before one has time to shoot.

Twenty fleas (*Ctenocephalus felis*) were taken from one specimen, which was also afflicted with ticks (*Hemaphysalis leachi*).

FELIS OCREATA UGANDÆ Schwann.

Kilenga in Kikami, Kimburu in Kisagara, Mvugi in Chigogo, Titu in Kinyatoru and Kiramba; Paka wa pori in Kiswahili.

Ten specimens from Ilonga, Kondoā, Tindiga, Kilosa, Dodoma, Mdjengo's, and Mtali's.

The largest male measured 583. 285. 133. 61 mm., and female 530. 308. 120. 60 mm. Tail-lengths seem to vary considerably and not in even ratio with the body-length.

In the sandy thorn-bush country (Dodoma to Mtali's) the Cats were of a very pale type, and I was inclined to think, after comparing the four skins with the six from Kilosa district, that they indicated a pale type. Just before I left East Africa, however, Capt. Godman shot a very pale example at Kilosa, almost in the spot where I had obtained some of the dark ones: it was quite indistinguishable from the thorn-bush type.

The dark wild cats are typical wild tabbies, and undoubtedly interbreed with domestic cats at times. At Kondoā I was shown a litter of six blind kittens under a pile of logs on the outskirts of an estate. Two of the kittens were all black, and four tawny-tabby. The house cat of the owner of the plantation was a black

tom. I was called upon to shoot a brother of this black tom at Kilosa, which had been out fighting one night, and came home with the brain exposed and very much scratched; presumably he had had a dispute with a wild cat as there were no tame ones anywhere near.

Most of these cats were trapped whilst attempting to get at fowls. The stomach contents were:—(i.) fowl and grass; (ii.) lot of grass; (iii.) bodies of skinned birds; (iv.) two rats and a bird's feather; (v.) a rat (*R. r. alexandrinus*) and the remains of a fowl.

There were screw-worms on intestines and in viscera of one Tindiga specimen, but these were not preserved.

LYNX CARACAL NUBICUS (Fischer).

'Simba wagi in Kikami; Simba mweng'we in Chigogo.

The East African Lynx is generally referred to the above race, so I have ventured to put down the subspecies, though no specimen was obtained. I saw one skin from Itumba in Manyoni sub-district in the possession of a friend, and the only one seen besides was one offered for sale at Shanwa, which had presumably been killed in the Mwanza District. The natives state that these animals hunt in parties of five or six but that they are rarely seen.

UNGULATA.

B O V I D Æ.

? BOS CAFFER RADCLIFFEI Thos.

Two specimens, a male from Myombo and female from Uluguru Mts. Very common at Kilosa and throughout the district, they frequently enter the Otto Plantation and have been seen within a few hundred yards of the houses.

My native collector, Salimu, shot the cow with a 12-bore gun in circumstances of sufficient interest to justify my repeating them here. Buffaloes had been doing damage in a shamba on the mountain-side, and the owner of the plot spent several nights guarding his crops. He was only armed with a spear, and on one night was chased by a young cow (he may have attacked the animal first), the native clambered on to a rock, and the angry animal fumed at the base of it attempting to reach him: he leaned over and stabbed it with the spear about six times along the spine, the spear barely penetrated below the skin. The animal did not leave the shamba with the rest of the herd next morning but lay up in the mtama near a path. It charged two natives, throwing them down and sticking its horn into the side of one, but the horns being short not much damage was done.

Knowing nothing of this, Salimu was returning from collecting birds the following morning when Jumbe Magoma (the local headman) came running towards him along the path and unceremoniously clambered into a tree. Salimu called out to know

what was the matter, and hardly had received the reply 'Buffalo' gasped out by the somewhat winded jumbe, when round a bend in the path came the infuriated buffalo. Salimu states that he jumped up on a rock some eighteen inches high close to the path, and as the animal came for him he fired the only charge of S.S.G. which he had full in its face. The animal stopped and shook the blood from its face, and profiting by this interval Salimu essayed to clamber into the jumbe's tree, but before he had made good his seat the buffalo butted the tree and nearly succeeded in dislodging him. As soon as he was firmly seated he took the gun from the jumbe and loaded it with No. 3 shot, which he fired in the animal's face every time it came back. In all he fired at it six times before it drew off, swayed, and finally fell.

An examination of the skull shows that the S.S.G. smashed a large hole in the frontal bone; the shot was very close, so that the animal must have been nearly on to him when he fired. The skull was pitted with No. 3 shot in every direction, most of which did not penetrate, but I imagine some entered by the hole already made by the S.S.G., and the animal mainly succumbed to loss of blood from the first charge.

BUBALIS COKEI WEMBAERENSIS Zuk.

A single male (1860. 370. 520. 200 mm.) from the Wembere Plains near Dombolo, 9. xi. 21. I use the above, possibly invalid, subspecific name as this Hartebeest is from the type-locality of this alleged race.

BUBALIS LICHTENSTEINI Peters.

A male (1900. 432. 513. 210 mm.) and a female were shot at Kipera on 8. ix. 22. The latter held a female foetus (630. 220. 260. 90 mm.), and I collected twenty maggots of a bot-fly (non det.) from the nostrils of the adult. The species is quite common at Kipera, the largest herd numbered perhaps twenty, but they usually go in parties of five or six. When a suitable thicket is found in which to rest, they return to the same spot day after day.

DAMALISCUS KORRIGUM JIMELA Matsch.

A male (2230. 370. 435. 190 mm.) and female (1890. 360. 435. 190 mm.) Topi were shot at Sagayo on 3. xi. 22. This must be very near the type-locality of the subspecies. There were two other adult females with calves running to heel with this bull; the female shot was the smallest of the three. In its stomach were grub-like parasites.

CONNOCHETES TAURINUS TAURINUS Lyd.

Nyumbu in Kikami, Kisagara, and Kiswahili.

A single male Wildebeest (2380. 530. 480. 225 mm.) on the Mkata Plains, 13. ix. 21. It was accompanied by four females.

CEPHALOPHUS MELANORHEUS SCHUSTERI Matsch.

Sesi in Kikami.

A pair of Blue Mountain Duiker (♂. 610. 190. 88. 50 mm. ♀. 670. 180. 60. 55 mm.) were killed by natives in their gardens at Bagilo, Uluguru Mts.

CEPHALOPHUS GRIMMI SHIRENSIS Wrought.

Funo in Kikami, Kisagara, and Kiswahili.

A single pair of Duiker were shot on the hills behind Kilosa during December 1920 (♂. 825. 100. 225. 100 mm.). They are quite common, but owing to the long grass and the quickness of their hearing, very difficult to procure.

A fly (*Hippobosca capensis* v. Olf.) was taken on one of these Duikers.

OREOTRAGUS OREOTRAGUS SCHILLINGSI O. Neum.

Ngulungulu in Kisukuma and Kiramba. The Kiswahili name for all Klipspringers, viz. Mbusi mawe—the goat of the rocks—is in general use however.

Schillings' Klipspringer was met with at Mtali's and Sagayo, a pair being obtained (♂. 630. 35. 190. 80 mm.). When feeding among the bushes at the foot of their kopjes in the early morning they appear boulder-grey, and may easily be mistaken for Duikers if not expected.

OUREBIA COTTONI Thos.

A single male of Cotton's Oribi (770. 70. 200. 150 mm.) was shot at Sagayo on 6. xi. 22 in grassy maiombo and thorn-bush country.

RAPHICEROS CAMPESTRIS NEUMANNI Matsch.

The subspecific name is given on geographical grounds, for my specimens combine key characters of several races of *R. campestris* as given on page 149 of vol. ii. of the 'Catalogue of Ungulates.' They have (i.) a dark coronal mark, (ii.) a dark brown, triangular nasal spot, (iii.) a white ring round the eye and much white on the oral margin, lips, chin, throat, and inner surface of the limbs. Having compared them with skins in the British Museum, it seems very doubtful if some of these races are sound.

Three specimens of Steinbuck from Shanwa and Sagayo, viz. male adult (909. 50. 209. 105 mm.), female adult (855. 49. 205. 105 mm.), and female immature (540. 40. 190. 91 mm.). The latter was kept in captivity for three months and made a charming pet. It was only given milk, and grazed about for itself in the vicinity of the camp. When it wanted milk it used to attack the backs of the native's knees with vigorous pushes accompanied by loud sucking noises, and would give no peace till

attended to. Its death was solely due to the stupidity of a porter, who was carrying it and took no notice of the little creature strangling itself.

RHYNCHOTRAGUS KIRKI NYIKÆ Heller.

Kizimba in Kisagara, Chizimba in Chigogo, Sala in Kisukuma. Paa for all Dikdik in Kiswahili.

Eight males and six females were shot at Mbala, Igulwe, Pooma, Mtali's, Usurwe, Usshora, Ulugu, Mkalama, and Sagayo.

The largest male measured 725. 41. 200. 80 mm., and largest female 700. 50. 210. 80 mm. They show a good deal of variation, particularly as to the presence or absence of white spots upon the legs.

At Igulwe a female was shot on 7. ii. 23 which held a small ♀ foetus, measuring 85. 4. 22. 6 mm. The Usshora specimen was caught by a dog, and I imagine may only have been dropped that day (30. x. 21). It lapped milk readily, but died on the night of the second day though excreting normally. At Mbala on 27. ii. 23, an immature male, whose horns were just sprouting (♂. 580. 33. 175. 70 mm.), was running with its mother (♀. 690. 50. 195. 75 mm.); who appeared to be still nursing him.

These little buck are quite common throughout the Dodoma thorn-bush country, often in places where there is not a drop of water and the vegetation apparently dried up. They have a habit of resorting to the same spot to relieve themselves, as a civet does also. At Singida I came upon a place where both these animals had been using the same spot for several days at least.

The Pooma specimen was heavily infested with fleas, which have been identified as *Ctenocephalus felis* and *isidis*.

REDUNCA REDUNCA TOHI Heller.

Tohi in Kikami and Kiswahili; Nhobe in Kisagara.

Though Reedbuck were comparatively common a few miles from Kilosa, I never shot one, and the only specimen obtained was the skull of a male shot by Capt. Turnley on 28. xii. 20. Reedbuck were several times found which had been killed by leopards.

KOBUS ELLIPSIPRYMNUS Osg.

Kuru in Kikami and Kiswahili; Nhulu in Kisagara.

A male Waterbuck (2110. 390. 490. 210 mm.) at Kipera on 26. viii. 22, and a female (1750. 340. 470. 200 mm.) from Mkata River on 1. ix. 21. The latter had a very minute foetus. One was found that had been killed by lions near the Simbiti River.

ÆPYCEROS MELAMPUS SUARA Matsch.

Palla in Kinyaturu and Kiswahili; Mpalla in Kiramba.

A male Impalla from Zengaragusu on 2. x. 21, a female (1040.

138, 142, 130 mm.) from Mbulu's held a large foetus on 14. x. 21, whilst another female shot at Sagayo on 31. x. 22 held a very minute one. Large herds were met with on the Mkata Plains during the dry season. Two instances of Impalla being pulled down by leopards on the Wembere Flats during the dry season came under my notice.

GAZELLA THOMSONI Günther.

Lala in Kisukuma and Kiswahili.

A single male Thomson's Gazelle (1165, 245, 350, 130 mm.) from Sanga, and six females from Nduguyu River, Sanga, and Mwadira, of which the largest measured 1160, 200, 350, 120 mm. Of the two females from Mwadira, one had a back-turned horn nearly growing into the skull between the ears, whilst the other had a horn missing. This latter held a foetus (19. x. 22), as did one of the Sanga specimens shot on 16. x. 22.

HIPPOTRAGUS EQUINUS LANGHELDI Matsch.

Kolongo in Kinyamwezi, Kisukuma, and Kiramba. Korougo in Kiswahili, obviously a borrowed and corrupted name.

Roan were met with at Izikisia near Tabora (Tabora being type-locality of the subspecies), Mlewa's in Mkalama, and Sagayo. A pair were shot in the last-named locality, where the species is quite common; herds numbered from five to thirty individuals, one or two herds being met with daily. The male measured 2240, 480, 600, 290 mm., and the female 2280, 430, 480, 282 mm.; the latter held a foal nearly ready to drop (σ . imm. 760, 180, 330, 138 mm.), which was somewhat of a surprise as the males were running with the does.

In the stomach of the female were tapeworms (*Stilesia hepatica* Wolffhugel) and nematodes (*Setaria labiato-papillosa* Aless.), whilst microfilaria of the unsheathed variety appeared in blood-films.

HIPPOTRAGUS NIGER ROOSEVELTI Heller.

A single female (measuring 1900, 350, 350, 210 mm.) was shot on the hills behind Kilosa on 20. xii. 20. There were some thirty animals in the herd. A larger herd was met with at Mkata, whilst single individuals were of common occurrence at Kipera. Tabanids were present in large numbers on the animal that was shot, but no tsetse.

TRAGELAPHUS SCRIPTUS MASSAICUS Neum.

Mbala in Kikami and Kisagura.

Bushbuck are very numerous at Kilosa, but only a pair were shot, the male with a shot-gun from the verandah of the house. A female was shot on the banks of the Simiyu River on 31. x. 22,

which has been referred to this race though the two skins are very different.

Measurements of Kilosa ♀ 1170. 180. 340. 130 mm., and Sagayo ♀ 1180. 150. 335. 140 mm. In the latter was a foetal female, 480. 68. 180. 76 mm.

A male was found dead in fine condition, and I attribute its death to the bite of a puff-adder, there being a puncture on the haunch, the blood was fluid and much hæmorrhage about the vent (Kilosa, 26. iii. 21). Another was found in a donga that had been killed by a leopard, which had sprung on its back and had been carried some yards by the buck—a very old male. Setting gins for leopards on paths frequented by leopards is not altogether satisfactory, as I know of two instances in which bushbuck stepped into the traps and were caught; in one of these cases the leopard added insult to injury by carrying off the buck.

SUIDÆ.

CHOIROPOTAMUS CHIROPOTAMUS DEMONIS Major.

Nguruwe in Kikami and Kiswabili; Ngubi in Kisagara.

A young male (730. 305. 235. 120 mm.) Bush-pig was shot by my collector in rank grass into which the native had forced his way to pick up a monkey. A large pig which accompanied it (? mother) attempted to urge it away by rending its belly with her tusks, and inflicted no fewer than twenty-three large cuts as she endeavoured to push it along (Tindiga, 28. i. 22).

Mrs. Billinge, of Iringa, wrote me that the wild pigs of Runruli appear to be a smaller race, very fierce, and that "they play havoc with dogs." She sent in a half-grown one which, being confined in a room, sprang up around the walls to a height of two feet clear of the ground and eventually killed itself (♂. 800. 240. 180. 120 mm.). Three other captive young ones died as a result of being exposed to the sun, and one of these which I measured was ♂. 400. 135. 110. 65 mm. (Kilosa, 1. ii. 22).

PHACOCHERUS ÆTHIOPICUS MASSAICUS Lönnb.

Ngiri in Kikami, Kisagara, Kisukuma, and Kiswabili.

Four Warthogs were shot at Sagayo, of which the largest male measured 1110. 360. 210. 120 mm. and was plumbeous in colour. A female (1220. 350. 195. 119 mm.) shot the same day was brickish red. A few days before (2. xi. 22) a plumbeous female was seen accompanied by three bright rufous young ones.

On the Mkata Plains one day I stood face to face with a Warthog at about a hundred yards distance and mistook it for the gnarled roots of an overthrown tree; a second Warthog standing immediately behind the first, but with its head down, helped to foster the illusion of a fallen tree-trunk.

The Sagayo specimens were swarming with tsetse (*Glossina*

swynnertoni Austen), and had many worms (*Ascaris lumbricoides* L., young ♀; *Esophagostomum* sp. n.) in their stomachs, but blood-smears taken from them gave negative results.

EQUIDÆ.

EQUUS QUAGGA CRAWSHAYI de Wint.

Punda milia in Kiswahili, Sangeri in Kizungwa, Nhyenie in Chigogo, Ngno in Kiramba and Kisukuma.

Three specimens were shot at Mtali's, Simbiti River, and Sagayo respectively. The Mtali specimen was a very old male (2470. 470. 525. 190 mm.), the Sagayo female measured 2400. 430. 520. 170 mm., and was carrying a foal very near birth (♀. 1030. 220. 390. 105 mm.) on 2. xi. 22.

There were maggots in her stomach, a large tapeworm (*Anoplocephala rhodesiensis* York. & South.) nearly an inch wide, and nematodes (*Setaria equina* (Abildg.), ♀). The Mtali male had worms (*Crossocephalus viviparus* (Linst.) ♀ and *Strongylus vulgaris* Less. ♀ ♀, and *S. asini* Blgr. ♂ ♂), with numerous Oestrid larvæ in its nostrils, and scores of ticks (*Amblyomma* sp., *Hyalomma aegyptium* var., and *Rhipicephalus evertsi* Nn.) about the anus.

ELEPHANTIDÆ.

ELEPHAS AFRICANUS KNOCKENHAUERI Matsch.

Ndoo in Kinyaturu.

A fact worth recording was the appearance of four Elephants some 200 yards from the Boma at Singida at daybreak on 6. x. 22. The country is for the most part open rolling downs with occasional rocky kopjes here and there. It was surmised that the animals wandered from the western side of the lake west of the Boma, where Elephants are known to exist in the dense but low thorn-bush scrub. They drank at the lake east of the Boma and lost their way. They were fired on by the native police at the Boma, and the male was wounded, he was followed up and killed in a native garden some five miles north. He measured ten feet at the shoulder, and his tusks weighed about 40 lbs. apiece. One ear had a curious long tail about 8 inches in length, doubtless caused by some injury. The other ear, which I preserved and which is now in the Game Dept. Office, had two holes in it as if made by bullets at some time or other. Presumably I am correct in referring it to this race.

PROCAVIIDÆ.

PROCAVIA BRUCEI PRITTWITZI Brauer.

Mhimbi in Chigogo, Pimbi in Kinyaturu. Pimbi is also the Kiswahili name for all species of Hyrax.

Eleven specimens from Gwao's, Mbulu's, Poona, Singida (seen),

Mdjengo's, Mtali's, and Tabora. Skins from Dodoma and Tabora referred to *P. frommi* in my last notes have since been referred to this race.

Largest male 450. 0. 64. 35 mm.; largest female 470. 0. 60. 32 mm. Pregnant female with two minute fœtuses at Gwao's on 10. x. 21. Another also with two fœtuses at Mdjengo's on 24. x. 21, and two very large fœtuses in a Tabora female on 18. xi. 21.

Like all the other hyraxes their stomachs contained finely masticated, bright green leaves of the shrubs which grow about the bases of the rocky kopjes where these creatures dwell.

Fleas (*Xenopsylla isidis*) were very numerous on the Mbulu specimen.

PROCAVIA BRUCEI MATSCHIEI Neumann.

Twenty specimens from Shanwa and Sagayo, where they are very abundant on the rocks, and at the former place 'barked' loudly when approached.

The largest male measured 530. 0. 75. 30 mm., and female 545. 0. 67. 30 mm. Three of the Shanwa females held minute embryos on 20. x. 22. There were three in one and two in the others. The stomachs of those examined were clean.

I had a young male alive for a fortnight, which fed readily on green stuffs and allowed itself to be stroked, but was very nervous of shadows and of being suddenly approached. It succumbed to a severe hailstorm.

PROCAVIA TERRICOLA SCHUSTERI Brauer.

Mhelele in Kikami.

Six specimens from the Uluguru Mts. Largest male 605. 0. 77. 35 mm. The largest female does not exceed the measurements of the one recorded under *Procavia* sp. on p. 67 of my earlier paper. The youngest female taken this time measured 240. 0. 45. 20 mm.